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The Effects of Inclusive School Environments on the Academic Achievement of Elementary General Education Students as Measured by Standarized Tests Over a Single and Multi-Year Period

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THE EFFECTS OF INCLUSIVE SCHOOL ENVIRONMENTS ON THE ACADEMIC ACHIEVEMENT OF ELEMENTARY GENERAL EDUCATION STUDENTS AS MEASURED BY STANDARDIZED TESTS OVER A SINGLE AND MULTI-YEAR PERIOD

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ABSTRACT

The purpose of this study is to investigate the impact of inclusive school environments on the academic achievement of elementary general education students as measured by standardized test data over single- and multi-year periods. The study evaluates post-hoc standardized testing data for elementary-grade students in one South Jersey, DE District Factor Group elementary school, resulting in recommendations for policy, practice, and future research.

The New Jersey Assessment of Skills and Knowledge for grade 4 and the Terranova Assessment for grades 5 and 6 were used to compare Language Arts Literacy and Mathematics achievement scores. Independent and matched-pair T-tests were conducted for the purpose of this study to ascertain if inclusive environments had a statistically significant impact on the test scores of the general education students in the inclusive classroom.

The results of this study reveal no statistically significant difference between the general education student in an inclusive setting and their general education peers in the non-inclusive setting.

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INTRODUCTION

On January 23, 2001, President George W. Bush sent his plan for comprehensive educational reform now known as No Child Left Behind (NCLB) to the United States Congress. Because of NCLB, today's educational leaders and policy makers are facing greater challenges and mounting pressure to meet the mandates imposed under this reform. With significant limitations on fiscal resources, more complex social issues, and greater public scrutiny, leaders are not only professionally responsible, but they are also required under two of the four pillars of NCLB to be more accountable for student achievement results, and as leaders, they must utilize data-driven decision-making to place an emphasis on teaching methods that are proven to work.

In addition, as indicated in the title of the act, today's educational leaders have had to move toward a more inclusive philosophy of educating students. In a letter to the Dr. Vito Gagliardi, New Jersey Commissioner of Education, on May 11, 2001, Acting Deputy Assistant Commissioner Thomas M. Corwin states that New Jersey must ensure that all students are participating in assessment and that the information for all students must be provided to the public for greater accountability in ensuring that no child is left behind. Fundamental to NCLB is the goal of improving the academic achievement of all students, particularly to close the achievement gap between disadvantaged and other groups of students. Some educational leaders call this an impossible dream, while others see inclusion as the only way a democratic system can ever exist. One thing is for certain – NCLB represents a significant change in the history of the American educational system.

Looking back through American history, one can trace an ever-evolving system of education. At its inception, formal schooling was an opportunity largely given to the affluent. Over time, that mindset changed and the people in power, typically the wealthy, began to notice the benefits of promoting a basic set of skills to standardize the labor force and make the general population more productive (Friend, 1996). From that concept grew one-room community schoolhouses that catered to the most basic needs of reading, writing, and mathematics. Very few students, once again mostly the affluent, finished this formal education and had the opportunity to go on to more advanced studies at the university level, at least until the Industrial Age.

During the 1920s and 30s, the real evolution of schools as we currently know them in the United States took place. During this time, society moved away from the farming industry and into a time in which it was essential that workers could perform at optimum performance levels. Industry realized that a more educated workforce was a more productive workforce able to produce a higher quality product, ultimately leading to profit. While the concept of formal foundational schooling and its newfound importance certainly opened the doors for some people, education was still a far cry from being inclusionary. Many children were excluded because of the distance they lived away from the school, family obligations, cost factors, or ignorance regarding the need for education.

In this country, even as recent as the 1950s, we still closed those very same school-room doors to many children within our borders. In 1954, a landmark case, *Brown v. Board of Education*, opened those doors to African American students. This case paved the way for equality for all children in the U.S. to receive a quality education; more importantly, it established that "separate was not equal." The Elementary and

Secondary Education Act of 1965, the precursor to today's NCLB, further supported the concept that all children had the right to an education.

In the 1970s, those concepts of equality and fairness for all began to greatly influence another population in the United States -- the handicapped or learning-disabled population. For decades, even centuries, the standard practice for students with disabilities was to ship them off someplace so they would not be an embarrassment to their families or communities. They were seen as second-class citizens, defects, damaged goods; as such, they were often placed in group homes to be cared for and treated by someone else. But that all changed with the Education of All Children Act in 1975, renamed in 1990 as the Individuals with Disabilities Act (IDEA). This act gave students with disabilities the right to be educated in public schools with their peers in general education programs.

While PL 94-192 has been in effect since 1975, the educational community has spent nearly 30 years defining and redefining the terms, developing the funding and operational mechanisms to fully implement the law and code, and trying to change the culture for acceptance. All one has to do is sit for a few minutes in a Pupil Assistance Committee meeting, 504 Plan meeting, or Individualized Education Plan (IEP) meeting to observe that we are still a long way from reaching these goals. Inclusion in 2005 is still one of the most disputed and discussed concepts in education. Educators (administrators and teachers), policy makers (politicians and Boards of Education), advocacy groups, parents, and individuals with disabilities are still looking for the funding and support to truly make inclusion a success. Responsible stakeholders are still looking for data to determine the most effective delivery models for inclusive education

and if those models produce greater student achievement. It is this ongoing debate between the stakeholders, the needs of students, the federal mandates, and the lack of qualitative data for policy makers to make informed, prudent, and fiscally responsible decisions that ultimately drives the need for this study.

Problem Statement

In an ever-changing educational system plagued with changing mandates and competing legal, social, and political viewpoints, educators, particularly educational leaders and policy makers, often find themselves in a pedagogical dilemma. While there is a significant amount of literature to support inclusion, especially for the special needs student, most of it comes from a qualitative perspective using interviews, focus groups, and surveys to report the findings. This body of research generally supports the concept that special needs students benefit from inclusion and that even general education students benefit from this educational model. (Brinker & Thorpe, 1984; Fisher et al., 1995; Salend, 2001; Staub & Peck, 1994; Tichenor & Piechuro-Couture, 1998)

However, in today's results-based or test-driven environment, a general lack of empirical data exists to support decision-making for educational policy leaders. The problem is that a large void exists in the literature regarding substantive quantitative data to support the notion that students in general perform better academically as result of inclusive educational environments.

Significance of the Study

Several research projects and researchers have concluded a need to continue, expand, or create data that builds an empirical foundation for educational leaders to make decisions. Kavale (2000), in his article "Mainstreaming to Full Inclusion: from orthogenesis to pathogenesis of an idea," states, "Without an empirical foundation, policy issues become ideological debates that represent what Sowell (1995) termed a 'conflict of visions'" (p. 209). He further states that while the ideological and political support for inclusion exists, the empirical evidence is far less substantial; thus, we need to use a more "tempered" approach to educational change, one that is based in research, as well as ideological and political consideration (p. 210).

These sentiments are echoed in a report from the President's Commission on Excellence in Special Education (Sailor, 2002). In the report, Sailor states that further research is needed to "establish and evaluate inclusive general education classroom arrangements...and incorporate special education teaching and learning processes" (p. 2). Researchers such as Dettmer, Dyke, and Thurston (1999); Gerber and Popp (1999); Hardy (2001); Lawton (1999); Murawski and Swanson (2001); Rosman (1994); Sharpe , York &Knight (1994); Vaughn et al. (1998); Vaughn and Schum (1995); Walsh and Snyder (1993); and Weichel (2001) all claim that a strong need exists for additional research on inclusive practices and many of these researchers specifically suggest further exploring academic achievement scores for co-teaching models and comparisons to mainstream, general, and special education classes.

Walsh and Snyder (1993) succinctly frame the need and significance of this research. As leaders and policymakers, we do not have the statistical data required to

comprehensively and responsibly assess the instructional change proposed and in various forms of implementation within today's inclusion classroom. Moreover, as policy makers at a time in which resources can be scarce and need prioritization, we certainly do not have specific data to relate inclusion to successful academic outcomes for all students within the classroom.

Purpose Statement

The purpose of this study is to investigate the impact of inclusive school environments on the academic achievement of elementary general education students as measured by standardized test data over single- and multi-year periods. The study will look at post-hoc standardized testing data for elementary-grade students in one South Jersey, DE District Factor Group elementary school resulting in recommendations for policy, practice, and future research.

The key hypothesis or null hypothesis for this study is:

H_O: Inclusion, as defined in this study, has no impact on general education elementary students' academic achievement as measured by standardized tests.

This hypothesis is tested against the alternative:

H_A: Inclusion, as defined in this study, has an impact on general education elementary students' academic achievement as measured by standardized tests.

Significance at the .05 level will be the determiner to reject the null hypothesis or accept the alternative

Research Questions

The following research questions are to be targeted in this study:

1. What does standardized testing data suggest regarding the effectiveness of inclusion on student achievement and the allocation of administrative time, effort, and resources?
2. What are the differences on standardized tests when disabled students in inclusive classrooms are compared to non-disabled students in the same inclusive classrooms?
3. What are the differences on standardized tests when non-disabled students and disabled students are combined in co-teaching classrooms and are compared to students in traditional classroom settings at the same grade level?
4. What are the differences on standardized tests when non-disabled students taught by special education and general education teachers in co-teaching teams are compared to non-disabled peers taught in traditional general education classroom settings at the same grade level?
5. What are the differences on standardized tests when disabled students taught by special education and general education teachers in co-teaching teams are compared to disabled students taught in traditional special education classroom settings?

Definition of Terms

The following definitions were used for this study:

Academic Achievement: For the purpose of this study, *academic achievement* is defined as the Normal Curve Equivalent (NCE) scores obtained from the nationally normed standardized Terranova Exam and the New Jersey Assessment of Skills and Knowledge (NJASK4) for grade 4. The scores for total reading and total mathematics will be used to determine the level of success.

Collaborative Teaching Model: General education and special education teachers work together to teach students with and without disabilities in a shared classroom; both are responsible for instruction, planning and delivery, student achievement, assessment, and evaluation. Students receive age-appropriate academics, support services, and possibly modified instruction. This model provides a minimum of scheduling problems, continuous and ongoing communication between educators, and a lower student-to-teacher ratio than other inclusive models (Gartner, 1997).

Co-Teaching: Two or more professionals jointly deliver substantive instruction to a diverse, or blended, group of students in a single physical space (Cook & Friend, 1995, as cited in Weichel, 2001).

Disabled: As defined in the Individuals with Disabilities Education Act (IDEA), *disabled* refers to a student with mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbances, orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities, and who, by reason thereof, needs special education and related services.

District Factor Group (DFG): The DFG is a composite statistical index of socioeconomic status that is created for all school districts in New Jersey using data for seven indicators (percent of population with no high school diploma, percent with some college, occupation, population density, income, unemployment, and poverty) available in the decennial Census of Population (New Jersey Department of Education, 2005).

Elementary School: As defined in the Individuals with Disabilities Education Act (IDEA), *elementary school* means a nonprofit institution day or residential school that provides elementary education, as determined under state law. Federal Statutes and Regulations for Special Education – New Jersey Edition (p.12) was used to determine the level of academic achievement.

General Education Student: This term refers to a person in grades 4 through 6, ranging in age from approximately 10 to 13 years old, who is not eligible to receive special education and/or related services in accordance with federal or state law or regulation (N.J.A.C. 6A:14-1.3, 2002, p.396).

General Education Teacher: For the purposes of this study, a *general education teacher* is defined as being certified by the State of New Jersey with a standard or provisional certificate to teach non-disabled students.

Inclusion (Inclusive Programming): While inclusion has many definitions and is often used interchangeably with terms such as integration, mainstreaming, Regular Education Initiative, full inclusion, and Least Restrictive Environment, for the purpose of this study, *inclusion* is described as the instruction of students with disabilities in general education classrooms (Mastropieri & Scruggs, 2000). Specific to this study, the support

system employs a co-teaching or collaborative model including both a special education teacher and a general education teacher.

Individualized Education Plan (IEP): An IEP, according to New Jersey Administrative Code 6A:14, is defined as, "a written plan developed at a meeting according to N.J.A.C. 6A:14-2.3(I) 2 which sets forth present levels of performance, measurable annual goals and short term objectives or benchmarks and describes an integrated, sequential program of individually designed instructional activities and related services necessary to achieve the stated goals and objectives. This plan shall establish the rationale for the student's educational placement, serve as the basis for program implementation and comply with the mandates set forth in this chapter" (p. 395).

Least Restrictive Environment (LRE): The law states that "to the maximum extent appropriate, children with disabilities are educated with children who are not disabled, and special classes, separate schooling, or removal of children with disabilities from the regular educational environment occurs only when the child is such that the education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily" (Laski, 1997).

Non-Disabled: For the purposes of this study, *non-disabled* refers to general education students not identified as having any of the disabilities listed under the definition provided in the Individuals with Disabilities Act (Federal Statutes and Regulations for Special Education – New Jersey Edition, p. 11).

Non-Inclusive Programming (traditional programming): This term encompasses any program in either general or special education settings in the public school where no amount of inclusive, co-teaching, or collaborative teaching practices are being employed.

Resource Room: This term, interchangeable with supplemental program, replacement program, or pull-out program, is defined as a class that is intended to be a resource for everyone concerned with the education of children with disabilities. Typically, the resource teacher teaches the child with learning disabilities directly for a brief period each day and serves as a resource teacher for the mainstream teachers who work with the child for the majority of the school day. (http://education.evansville.edu)

Self-Contained Classroom: The *self-contained classroom* is the most restricted setting in which children with learning disabilities are found in the public school setting. In this type of placement, the student is removed from the mainstream classroom for all or most of the school day. (http://education.evansville.edu)

Special Education Student: A *special education student* is defined as "a person between the ages of 3 and 21 who is eligible to receive special education and/or related services in accordance with Federal or State law or regulation" (N.J.A.C. 6A:14-1.3, 2002, p.396). The students in this study are in grades 4 and 6 and range in ages from approximately 10 to 13 years old.

Special Education Teacher: For the purposes of this study, a *special education teacher* is defined as being certified by the State of New Jersey with a standard or provisional certificate to instruct students with disabilities.

Standardized Testing: For the purposes of this study, standardized testing refers to either CTB McGraw-Hill's Terranova battery of assessments or the State of New Jersey's Assessment of Skills and Knowledge (NJASK 4).

Supplemental Services: This term, as defined in the Individuals with Disabilities Act, means aids, services, and other supports that are provided in regular education

classes or other education-related settings to enable children with disabilities to be educated with non-disabled children to the maximum extent appropriate in accordance with section 612(a)(5) (Federal Statutes and Regulations for Special Education – New Jersey Edition, p.13).

Teaching for Success: For the purposes of this study, "Teaching for Success" is the name given to the Hamilton Township School District inclusion program.

Team Teaching: "*Team teaching* involves a restructuring of teaching procedures in which two or more educators possessing distinct sets of skills work in a co-active and coordinated fashion to jointly teach academically and behaviorally heterogeneous groups of students in educationally integrated settings, that is, in general education classrooms" (Welch, Brownell, & Sheridan, 1999).

Assumptions

For the purposes of this study, it was assumed that the students in both the inclusive and the general education programs were randomly assigned, that the teachers co-teaching in the inclusive program voluntarily took the assignment, and that these teachers were interested in accommodating the diverse needs of all students in the classroom. It was also assumed that in addition to the teachers, the administration was supportive of the inclusion program and provided the time, resources, and professional development needed for success. Lastly, it was assumed that parents were given the opportunity to volunteer their students to participate in the program.

Limitations and Delimitations

This study is based on the data collected from one K-8 system in rural/suburban parts of southern New Jersey. It does not include research data on the effects of inclusion on academic performance for K-12 districts, high school districts, urban districts, special services districts, preschools, private, or parochial schools.

It is recognized that the community is predominately middle-class as identified by its DE District Factor Grouping (DFG). This fact limits the validity of generalizing the results of the study to other districts outside of the DE classification. The researcher specifically chose this DFG to eliminate biases and other intervening variables that could be found in both the most affluent and the most depressed communities.

The researcher also recognizes that drawing from one elementary school system allows for the possibility of bias from local factors such as curriculum, staffing, class size, parental or community support, administrative support, and/or political influence.

The research does not take into account the issues surrounding the interpersonal relationships between the team teachers or the relationship between the teachers and their students. It is also recognized that differences in teacher experience, teaching styles, professional development, and other training exists and cannot be removed; these factors could subsequently provide alternate explanations for the level of program success and student achievement. Conversely, the researcher also recognizes that due to the voluntary nature of teacher involvement in inclusion programs, similar beliefs regarding inclusive education may also limit the broad range of teaching styles and training. It should also be noted that there are inherent differences between general and special education students. Traditionally, general education students tend to do better than special education students

on achievement tests. It is this discrepancy on tests that is often one of the criteria for entry into the special education system.

Lastly, it is recognized that there are a variety of factors that can either positively or negatively effect student achievement, including but not limited to validity and reliability of standardized testing, social and emotional factors, IQ, class size, differentiated instruction, teaching methodology, small learning communities, multiple intelligences, time on task, length of school day/school year, attitudes, roles, perceptions, gender, age, student classifications, teacher training, teacher experience, and supportive leadership. While some of these issues will be addressed in the literature review, they are not part of the statistical analysis and subsequently could affect outcomes.

As you will see in the literature review, the concept of inclusion for all students in the American education system has had a relatively short history. The following chapter provides a comprehensive look at the following facts to provide educational leaders with a brief background to help with good decision-making:

- a history of inclusion;
- a definition of inclusion;
- perceptions and attitudes of stakeholders toward inclusion;
- an overview of the collaborative model for inclusive instruction; and
- the impact of inclusion on student performance.

Chapter 2

LITERATURE REVIEW

The following chapter is divided into several sections in an effort to provide some background on the specific research being conducted. The first section expands on the introduction and provides a brief historical background of inclusion, looking specifically at the factors leading to the development of the Education of All Children Act in 1975 and the steps taken since then to affect programs and implement what is now called the Individuals with Disabilities Act (IDEA). The second section defines inclusion and presents a variety of viewpoints surrounding inclusion as presented in the literature. The third section takes a look at the influential perceptions or attitudes, both positive and negative, shared by the major stakeholders in the educational community (parents, teachers, and administrators). The fourth section takes a more detailed look at one instructional model, the collaborative model, which has consistently been identified as a recurring part of successful inclusion programming. The final section looks at inclusion and its impact on academic success.

Inclusion – A Brief History

In the 1990-91 school year, more than two million children were identified as having a learning disability (LDA, 1993). By 1996, that number had grown to 4.4 million (USDOE, 1996). In 2002, it was estimated that the school-age special education population had exploded to approximately six million students (Bush, Commission on Excellence in Special Education, 2002). Before 1975 and the passing of the Education of All Children Act, many handicapped students received inadequate services; in fact, over

one million of those students were excluded from public schools (USDOE, 1996). Prior to this law, the discretion was left to local school districts and, in some cases, to individual states. In 1965, PL89-10, The Elementary and Secondary Education Act (ESEA), was signed into law by President Lyndon B. Johnson providing the basic building blocks for public education funding and inclusive education. This act is considered a precursor to the 1975 Education of All Children Act (PL 94-192) and the 2001 No Child Left Behind Act. Advocacy groups continued to raise awareness about the issue and made a small victory for special needs students in 1966 when Congress established the Bureau for Education of the Handicapped (p.*vi*). This action opened the door for ongoing discussions regarding funding and the responsibilities of the States to provide a "free and appropriate public education" (FAPE) to all students.

However, it was not until two groundbreaking cases, *Pennsylvania Association for Retarded Children v. Commonwealth of Pennsylvania* in 1971 and *Mills v. Board of Education of the District of Columbia,* established that "the responsibility of States and local school districts to educate individuals with disabilities is derived from the equal protection clause of the Fourteenth Amendment of the United States Constitution" (USDOE, 1995a, p.1). These cases led to the passing of PL 94-192, or the Education for All Handicapped Children Act, in 1975. The purpose of the act was to allow all children with disabilities to receive a free and appropriate public education with the help of federal funding to the states and local school districts. The legislation provided guidance for the identification of handicapped students, a funding formula, and the today's basic philosophy that students with disabilities should receive services in the "least restrictive environment" (LRE) possible.

In 1986, Madeline Will, the Assistant Secretary for Special Education and Rehabilitation in the United States Department of Education (USDOE) was instrumental in the development of inclusion through her seminal paper, "Educating Students with Learning Problems: A Shared Responsibility". This document, called the Regular Education Initiative (REI), often considered a precursor to the Individuals with Disabilities Education Act (IDEA) (Hardy, 2001), focused on special education access to general education programming in the least restrictive environment (Reynolds, Wang, & Walberg, 1987).

Over the next two decades, parents supported by vast advocacy networks became increasingly aware of their rights and the rights of their children, and in 1990, PL 94-192 was reauthorized and renamed the Individuals with Disabilities Education Act, or PL 101-476. IDEA, like PL 94-192, continues to provide the same basic protections, the right for all children to receive a free and appropriate public education in the least restrictive environment alongside their non-disabled peers (Perry & Kamann, 1994, as cited in Scirica, 2001).

It was at this point in inclusive education's history that the most significant changes took place. With IDEA, many changes were initiated, not the least of which included changing referring to students as "individuals with disabilities" instead of "handicapped children." The changes reflected an increased awareness in the public domain that the term *disability* was and still is a natural part of humanity and does not diminish the rights of those individuals with disabilities to participate and contribute to society (USDOE, 1995a, p. 5). Disabilities and those students who have them have become accepted as normal and from that principle, the concept of inclusion was born.

Inclusion – Contested Points of View

While disabilities and disabled students have become accepted in many ways, the conflict between "abolitionists and conservationalists" over the future of special education continues to escalate (Fuchs & Fuchs, 1991). In fact, inclusion has been one of the most hotly contested educational topics over the past 30 years, since the passing of PL 94-192. During those 30 years, educators and politicians alike have continued to refine the concepts, and courts' decisions have also had a great influence on inclusion. From a general perspective, *inclusion* can be defined as "the goal and method by which teachers create a classroom which values the special needs child, rests on a belief in human interconnectedness and the idea of the classroom as an open, safe, and yet challenging environment" (Lang & Berberich, 1995). Inclusion is also defined as "the term currently accepted to describe the instruction of students with disabilities in general education classrooms" (Mastropieri & Scruggs, 2000) and "a belief that all students are entitled to be important and valued members of their neighborhood school communities" (Friend & Cook, 1996). For the purposes of this study, inclusion has been defined as the instruction of students with disabilities in general education classrooms (Mastropieri & Scruggs, 2000, as cited in Hardy, 2001).

Regardless of how it is defined, the concept of inclusion still brings great controversy in the educational marketplace. Even within the educational profession, one finds many dissenting views. Researchers such as Lipsky and Gartner (1987); Reynolds, Wang, and Walberg (1987); Stainback and Stainback (1984); and Thousand and Villa (1990) are well-known supporters of inclusion who feel that special education as it has

existed in a non-inclusive environment has failed students with disabilities. By categorizing and labeling students and placing them in pull-out programs, often using substandard materials and techniques, Reynolds (1989) outlines eight reasons why inclusion in the regular educational venue is essential to the improvement of education for students with disabilities.

These reasons include:

- the near-failure of special educators to demonstrate that programs involving separate resource classes, rooms, or schools have distinctive merit for services to disabled pupils, especially those with mild disabilities;
- the unreliable methods used to classify and place students in special programs;
- the growing number of children who are at risk for school failure;
- the high cost of diagnostic procedures;
- the stigma often associated with the negative terms used in classification and labeling of pupils;
- the emergence of ideas based on solid research to improve general education programs that presumably would make it possible to reduce the numbers of students referred to special education;
- the research evidence that revealed that programs offered to different categories of handicapped and at-risk students were not distinctive (there were no interactions between the categories of students and the instructional programs offered); and
- the increasing interest in restructuring schools, such that teams of educators can work together to serve students who have special needs.

The philosophy espoused by these researchers supports a growing body of research that has moved special education away from the concepts of pull-out and separate to one that is inclusive and takes place in the general education classroom.

Further statistical evidence provided from the National Center for Educational Statistics (1994) supports the view that the traditional special education environments do not necessarily have positive effects for special education students. Their research data (Rowan University, 2005) demonstrates the following facts:

- Fewer than 5% of students labeled for special education services ever leave the system and return to the mainstream educational environment.
- Only 57% of students in special education graduate with a diploma or certificate of graduation.
- Only 13.4% of youth with disabilities are living independently up to two years after leaving secondary school, as opposed to 33.2% of the general post-secondary population.
- Twelve percent of youth with disabilities have been arrested, compared to 8% of the general population.
- Almost one in five students labeled as emotionally disturbed are arrested at some point in their lives.

Dissenting views can be found regarding inclusion, even from groups that historically have worked with only handicapped children. Groups such as the American Council for the Blind, the Commission on the Education of the Deaf, the Council for Children with Behavior Disorders, the Council for Exceptional Children, and the

Learning Disabilities Association all hold the belief that placement options need to be diverse, and they oppose the concept of full inclusion (Fuchs & Fuchs, 1995).

Other researchers (Vaughn & Schumm, 1995) state "little empirical, documented evidence exists for the effects of full inclusion programs on students with disabilities and their families, particularly with regard to students with high incidence disabilities" (p. 264). They continue to maintain that placement issues for disabled students need to address the individual students' unique learning and social needs. If a classroom can accomplish that requirement and maintain the student in a setting as close as possible to students without disabilities (Fuchs, Fuchs, & Fernstrom, 1993), then inclusion has some merit only if it is supported with all the related services. As Elrich (1996) states, "Full inclusion, coupled with a removal of direct services constitutes a prescription for disaster" (p.198).

While proponents for inclusion cite many positive effects, given the potential and too often the reality, Elrich's prescription for disaster, it is easy to see why teachers, administrators, and parents are skeptical regarding inclusion. Parents, teachers, and administrators alike continue to be bombarded by conflicting choices and by the ever-swinging pendulum that dominates our educational climate.

This inconsistency increases the potential for both fear and frustration on the part of these key stakeholders. Parents of both special and general education students wonder if their children will get the best education possible. Special education parents wonder if their children will get lost in the larger classes or fall farther behind. They wonder if their children will be frustrated and shut down or if other students will ridicule them, causing a decline in self-esteem.

General education parents are largely concerned with how the inclusion of special needs students will impact the quality and quantity of the instruction. Often, parents will contest that the curriculum is being watered-down or "dumbed-down" to meet the needs of the special education students to the detriment of non-special education students. Beyond just the academic concerns, general education parents also sometimes raise concerns for other environmental issues, such as their children being introduced to mal-adaptive behavior; sometimes, these parents even have safety concerns for their children.

However, many studies show just the opposite when addressing stakeholder concerns. In a three-year study of an elementary inclusion classroom (Walter et al., 1996), results showed dramatic improvements in social skills and self-esteem when inclusion was implemented. Ritter, Michel, and Irby (1999) also showed that students in the inclusive setting avoided low self-esteem that often accompanies placement in a traditional special education setting. The students had increased self-confidence, developed camaraderie with the general education students, had better support from the general education teachers, and generally had higher expectations for themselves.

The general education students also received instruction in the inclusive setting that was better or equal to that of the traditional classroom (Salend & Duhaney, 1999). The addition of a special education teacher, small group instruction, individualized instruction, and assistance for the special needs students all had positive effects on the general education students (Hunt, 2000). In addition to academic gains, general education students developed a better understanding of individual differences and learned to value themselves and others, gaining a greater tolerance for student differences (Salend & Duhaney, 1999).

In general, the benefits of inclusion seem to outweigh any perceived negatives. In looking at the disabled student in an inclusion program, Kochhar, West, and Taymans (2000) found that special education students

- exhibited more appropriate social behaviors because of higher expectations in the general education classroom;
- performed at higher levels of achievement, or at least as high as those achieved in self-contained classrooms;
- had a wide circle of support, including social support from classmates without disabilities; and
- were able to adapt to different teaching and learning styles.

The authors also saw great benefits for the general education students involved in an inclusion program. The general education students

- had the advantage of having an extra teacher or aide to help them with the development of their own skills;
- gained a greater acceptance of students with disabilities;
- developed an understanding that the students with disabilities were not always easily identified; and
- were better able to understand the similarities among students with and without disabilities.

Inclusion – Attitudes and Perceptions

Whether for or against inclusion, the most critical component to the success or failure of any program is the attitude of those key constituents involved (Waldron and McLeskey, 1996; Stainback & Stainback, 1996). No matter how successful the program might be and how much students and parents support the concept, it will not be successful without the support of both the general and special education teachers. Miller and Savage (1995) state that "the success of inclusive schooling efforts is largely dependent on the general education teachers' ability and willingness to make appropriate modifications to accommodate individual differences" (p.2).

In research by Kuhn (1970), teachers were asked about their perceptions of inclusion, and largely the same concerns remain today. Teachers stated their confusion about what inclusion was, what it should be, and their fears about getting involved with it. They raised their training, knowledge, and experience, more specifically their lack of it, regarding special needs children as the major contributor in shaping their attitudes toward inclusion. Teachers often lack the necessary training to educate students with disabilities (Downing, Eichinger, & Williams, 1997), and according to Morsink and Lenk (1992), in order to have a positive effect on achievement, the teacher's training and effectiveness in instruction must be considered.

In addition to those fears, teachers expressed a fear over the loss of ownership or control in the classroom (Belcher, 1997). With their new roles evolving because of collaborative teaching models or team teaching, both general and special education teachers expressed concern over their loss of control over the educational process. The concept of closing the door and teaching students in isolation was traded in for an

inclusive classroom containing not only special needs students, but also another educator. The pressures of peer accountability coupled with the possibility that each teacher might not possess the skills and experience to do the job have great influence on the success of the inclusive program.

Teachers, according to Goleman (1995), asked, "Can we do this?", "Should we do this?", "Will someone force me to do this?", "What will happen to the children and me if I do?" Teachers were uncertain that even if they were philosophically open to the concept and were willing to take a risk, their administrators would not be supportive.

The concept of administrator support is another essential key to successful inclusion. In fact, it is the role of the school leadership to make it clear that all students are a part of the school community. It is the role of the administrator to remove as many of the barriers as possible and to promote a positive attitude and message to students, parents, teachers, and community.

Often the first barrier an administrator has to remove is his or her own biases or fears with regard to the teaching and learning process for special needs children. Just like parents and teachers, an administrator needs to seek training and often goes through the process of un-learning many of the concepts of exclusionary education that have been the mainstay of the American educational system for years.

Many administrators in today's marketplace raise questions regarding the effects and/or consequences of inclusion as it relates to standardized testing. In a market where high-stakes testing rules, administrators can often be reluctant to take the risk that scores will decline as a result of inclusion.

Once these fears and others are overcome, the administrator has a responsibility to address other barriers, such as facilities constraints, appropriate instructional materials, personnel concerns, and staff development/training for both special and general education teachers and aides. According to Firestone and Heller (1995), the administrator must manage if he or she wants to be successful in making the changes necessary for inclusion. As the manager, he or she must provide for and sell a vision, provide encouragement and recognition, obtain resources, adapt standard operating procedures, monitor the improvement effort, and handle disturbances.

Parents echo many of the same sentiments as both teachers and administrators. The parents of non-disabled students essentially want to know if their children's learning will suffer because of inclusion and if their children will receive less attention and time from their teachers (Staub, 1996). Hollowood et al. (1995) found that in a study of teachers' use of time in both inclusive and non-inclusive classrooms, inclusion had no negative impact on performance. In some cases, classrooms with mild special needs students saw increases in general education student performance (Manset & Semmel, 1997).

While parents of disabled students had similar concerns regarding time and attention, their focus primarily revolved around communication and social interaction, academic skills, and curriculum. Parents often expressed concerns about general education teachers' understanding of learning disabilities (Waggoner & Wilgosh, 1990).

Overall, parents of children with or without disabilities involved in inclusive programs generally had positive attitudes toward inclusion (Bailey & Winton, 1987; Guralnick, 1994; Peck, Carlson, & Helmstetter, 1992, as cited in Odom et. al. 1984).

With attention to the fears, concerns, attitudes of teachers, administrators, and parents, many of the barriers affecting successful inclusion programs can be eliminated.

Kochar, West, and Taymans (2000) categorize the barriers into three areas: organizational, attitudinal, and knowledge. From an organizational perspective, we know that there are limiting factors as prescribed by each state's special education statute and code that allow for a finite number of special education students in the inclusion setting. In the State of New Jersey, code stipulates that an in-class support setting can maintain up to six special education students. There are also guidelines at both the state and federal levels regarding optimum numbers for class size. The National Education Association (NEA) recommends that no more than 28 students make up an inclusion class, with no more than 25% of the class consisting of students with disabilities.

Another organizational problem has historically been staffing. Because co-teaching is the preferred method of instruction due to its ability to provide more comprehensive support to the students and to access the skills and talents of two educators with vastly different training and experience, it requires the administrator to think outside the box. Co-teaching requires the administrator to have the ability to creatively schedule existing personnel and sometimes provide larger instructional space because of the increased number of teachers and aides in the classroom. It also may include the need to hire new personnel to fill in the instructional voids that remain when the special education teacher is dedicated to just one group of students, as opposed to the usual practice of working with several classes at several grade levels.

The issues regarding organizational barriers and attitudinal barriers are often eliminated or greatly reduced by efforts concentrated on breaking down the knowledge

barrier. The primary findings in inclusive research regarding teachers indicate that many constituents agree in principle with the goals of inclusion but do not feel prepared to teach in the inclusive setting (Mastropieri & Scruggs, 2000). General education teachers do not feel they have received the necessary training to work with students with disabilities, and often special education teachers, especially in the middle school grades, feel they are not content experts and are consequently ill-equipped to teach, relegating them to a role more like that of an instructional aide and not a co-teacher.

Training prior to starting and during an inclusive program has positive effects on the success of a program. In fact, most programs that fail are attributed to insufficient training or in-servicing of teachers (Wolery et al., 1995). Effective professional development as defined by Bernal and Torres (1990) includes the following criteria: goal match, multiple sessions, orientation, collaboration, practice-sharing, and follow-up.

Understanding the history of inclusion, as well as defining the concept and looking at the attitudes and perceptions of the major stakeholders (parents, teachers, and administrators) and their influence on inclusion and inclusive practices is just a portion of what is necessary for a successful program. One of the most important components is the ability of stakeholders to take all of the information, research, and training available to teachers and be able to implement it through effective instructional methods and strategies.

Inclusion - The Collaborative Model

Tichenor (2000) found that perceptions varied throughout the research, but the researcher also noted that parents recognized and were satisfied with inclusion utilizing

the co-teaching model. In addition, according to the National Center for Educational Restructuring and Inclusion (1995, cited in Weichel, 2001), schools use a form of co-teaching more often than any other approach to implement their inclusion programs.

Just like inclusion, co-teaching comes under a variety of names and has many different definitions. *Co-teaching*, *team-teaching*, and *collaborative teaching* are the most consistently used terms to describe this element of inclusion.

No matter the term one chooses to use, the concept generally consists of two or more individuals, often a special education teacher and a general education teacher, delivering instruction to a mixed group of students in a single or shared instructional space (Cook & Friend, 1998).

Gartner and Lipsky (1997) break the teaming concept into three basic models. The consultant model is the most basic, in which the special education teacher works for periods of time with a small number of special education students in a re-teaching and supplemental format.

The second model, the teaming model, expands the time element and focuses the teacher with one grade level or team. In this model, the special education teacher provides some instructional strategies, academic modifications, and behavior plans for the students to be successful in the mainstream classroom.

The third model, the collaborative co-teaching model, is the one utilized in this study. In this model, two teachers work together with each student in the classroom (both disabled and non-disabled). The teachers plan together and the students receive whatever necessary supports required in the classroom. They have the maximum amount of flexibility to employ a variety of teaching techniques and models including but not

limited to parallel teaching, station teaching, team teaching, teacher/support teaching, and alternative teaching.

As with inclusion, many of the same barriers exist with co-teaching. Teacher approaches, structure, the culture of the school and community, overall fears and beliefs, training, planning, and unsuccessful relationships between teaching team members (Bauwens, Hourcade, & Friend, 1989; Johnson, Pugach, & Hammitte, 1998).

Schumaker and Deshler (1988) identify three significant barriers specific to secondary schools. They are the gap in skill levels of the students, deficits in the ability of instructors to provide intensive small-group instruction as needed by some students, and the general characteristics inherent in secondary education like schedules, voluminous content, social pressures, teacher expectations, and course loads.

In a study by Margaret Weiss (2002), teachers identified four variables that they considered barriers affecting their roles in the co-teaching classroom. They echoed the concerns regarding scheduling and content and added the acceptance of co-teaching models by their general education peers and the lack of skill required to address the different needs of special education students.

When these barriers are removed and co-teaching is done well, the potential benefits for students and teachers are great. While not the focus of this study, the collaborative model of instruction garners support from various areas of research. For example, in the inclusive classroom, small learning groups or communities are created, lending credence to the work of Walsey and Cotton. Class size is often reduced connected to the research of Achilles. Tomlinson's work on differentiated instruction is affirmed. Gardiner's Multiple Intelligences become applicable and the leadership roles

espoused in Fullan are put to the test.

Inclusion – Testing the Results

With an ever-growing body of data to support the social and emotional effects of inclusion (Turner & Traxler, 1995) and a generally more aware and socially accepting society, inclusive practices have become the norm in today's modern educational marketplace. At the same time, there has been a growing emphasis to hold school systems accountable for and measure the success of inclusion.

Ironically, in the state and federal governments' efforts to ensure that American schools truly were producing students that could compete both nationally and internationally, the focus changed to high-stakes testing. Rather than keep efforts focused on professional development; better materials; and individual teacher, school, and district accountability, taxpayer money has been spent on the creation, implementation, and scoring of dozens of norm-referenced and criterion-referenced tests. Now the federal government is considering its role in the development of national educational goals and perhaps even a national assessment.

The State of New Jersey developed its testing program in 1983 starting with the High School Proficiency Test (HSPT), now known as the High School Proficiency Assessment (HSPA). Next, the Early Warning Test (EWT), now known as the Grade Eight Proficiency Assessment (GEPA), was developed in 1988. Finally, in 1997, the state developed a 4th-grade assessment called the Elementary School Proficiency Assessment (ESPA). All three tests have been modified and renamed under the adoption of the New Jersey Core Curriculum Content Standards (NJCCCS) in 1996. Even as this

dissertation has been complete, the State continues to pursue changes in the testing model, including a test to be administered in 3rd grade.

While the research is still limited on this topic, many practitioners believe that high-stakes testing will have a detrimental effect on the progress made in educating the public on the concepts of tolerance and inclusion since IDEA was passed 30 years ago. As test scores are published and subgroups are created, administrators and teachers alike have already begun to change the focus of educating all students with the skills necessary to be successful in life with the skills necessary to be successful on a test. With the continuation of this testing model has come a shared concern regarding the effects of special needs students, now included more regularly in the schools, on test results. Not only are concerns voiced about the effect of special education student scores on the district and state reports, but people are also expressing concern about the effect special needs students in inclusive classes might have on general education scores. A general assumption has been that inclusive practices will have a negative impact on the general education students and ultimately on their standardized test scores.

Given these concerns, this research is designed to add to the small body of work that exists regarding the academic impact of inclusion on the general education student. Through ongoing data collection and analysis of standardized testing results, educational leaders and policy makers will be better equipped with the tools to make intelligent, data-driven decisions that will not only benefit students, but the entire educational community and community at large.

Chapter 3 details the methodology used to study the effects of inclusion on the elementary student's academic performance.

Chapter 3

METHODOLOGY

Introduction

This chapter describes the methods and procedures used in the study. The purpose of this study is to investigate the impact of inclusive school environments on the academic achievement of elementary general education students as measured by standardized test data. It is designed to add to the limited body of research in this area and to provide district leaders with the data necessary to make recommendations for policy, practice, and future research.

The chapter is organized into the following subsections: Subjects, Design/Data Collection, Data Sources/Instruments, Data Analysis Tools, Data Analysis Method, Research Questions, and Summary.

Subjects

The subjects of this study are general education and special education elementary students attending a grade 2-6 elementary school. This school is part of a K-8 rural/suburban district in Atlantic County, New Jersey. The district is characterized as a DE District Factor Group by the State of New Jersey.

The school district has a PK-1primary school housing approximately 640 students, a grades 2-6 elementary school housing approximately 1,656 students, and a grades 7-8 middle school housing approximately 714 students. In total, the district has

over 3,010 students and is experiencing exponential growth, expecting to have 3,240 students by 2004-05.

The district employs approximately 249 certificated staff and another 72 non-certificated support staff. The middle school and elementary school each have one principal and two vice-principals. The primary school has only one principal. In addition to building level administrators, the central office administration consists of a Superintendent of Schools, a Curriculum Coordinator, a Business Administrator, a Director of Special Education/Child Study Teams, a PK-4 Instructional Supervisor, a 5-8 Instructional Supervisor, and a Technology Coordinator.

The elementary sample used for this research includes the student population in grades 4 through 6. The 2003-04 grade level populations are as follows: grade 4 – 318, grade 5 – 329, grade 6 – 332. Each section at a grade level was determined to be part of one of the following types of classrooms: 1) an inclusion classroom as defined by this study, 2) a non-inclusive classroom, or 3) neither, and subsequently not usable in the study because the program was a self-contained special education classroom. Through this process of identification, three inclusion rooms were determined, 39 non-inclusive classrooms were determined, and four were excluded from the study as self-contained special education classrooms.

The student demographics for each grade level and teacher are detailed below in Tables 3.1, 3.2, and 3.3. Each of the classrooms is heterogeneously mixed with attention to academic ability, gender, and race. The table headings are as follows:

CR	=	Classroom
Tot	=	Total Number of Students in the Class
F	=	Female Students
M	=	Male Students

SE = Special Education Students
BS = Basic Skills/Title 1 Students
W = Caucasian Students
B = African American Students
H = Hispanic Students
O = Other

4th Grade (2003-04)
Table 3.1

CR	Tot	F	M	SE	BS	W	B	H	O
1	24	10	14	1	2	16	5	3	0
2	23	11	12	0	11	11	7	3	2
3	24	11	13	1	3	16	6	2	0
4	**22**	**11**	**11**	**5**	**0**	**11**	**5**	**2**	**4**
5	24	12	12	9	0	13	7	3	1
6	24	13	11	1	5	12	7	4	1
7	23	10	13	0	0	12	7	2	2
8	22	9	13	0	9	9	8	4	1
9	23	11	12	0	0	11	8	3	1
10	24	13	11	0	13	13	7	4	0
11	24	17	13	1	1	15	5	2	2
12	23	11	12	8	0	14	5	2	2
13	25	11	14	3	1	13	8	4	0
14	11	6	5	11	0	8	2	0	1

The inclusion classroom in the 4th grade where the collaborative model is being implemented is CR number 4. In that classroom, there is a general education teacher, a special education teacher, and a full-time paraprofessional or classroom aide. The six special education students in that classroom have the following classifications under the special education code:

Student #1 - Multiply Disabled
Student #2 - Multiply Disabled
Student #3 - Specific Learning Disability
Student #4 - Other Health Impaired
Student #5 - Multiply Disabled
Student #6 - Multiply Disabled

5th Grade (2003-04)
Table 3.2

CR	Tot	F	M	SE	BS	W	B	H	O
1	25	15	10	4	3	14	7	1	3
2	25	11	12	2	7	13	8	1	1
3	24	11	13	8	0	13	6	4	1
4	24	12	12	9	1	16	3	5	0
5	25	13	12	1	1	16	6	2	1
6	24	15	9	0	0	15	5	3	1
7	25	13	12	2	2	16	6	3	0
8	25	11	14	7	0	14	7	2	2
9	25	14	11	0	4	15	6	3	1
10	25	11	14	2	2	13	6	4	2
11	24	14	10	2	4	10	8	3	3
12	24	13	11	3	2	12	7	4	1
13	**24**	**14**	**10**	**6**	**0**	**13**	**6**	**3**	**2**
14	10	3	7	10	0	0	8	2	0

The inclusion classroom in the 5th grade where the collaborative model is being implemented is CR number 13. In that classroom, there is a general education teacher, a special education teacher, and a full-time paraprofessional or classroom aide. The six special education students in that classroom have the following classifications under the special education code:

Student #1 - Multiply Disabled
Student #2 - Communication Impaired
Student #3 - Multiply Disabled
Student #4 - Multiply Disabled
Student #5 - Multiply Disabled
Student #6 - Educationally Disturbed

6th Grade (2003-04)
Table 3.3

CR	Tot	F	M	SE	BS	W	B	H	O
1	25	11	14	13	2	18	5	2	0
2	24	11	13	11	0	12	6	3	3
3	23	14	9	1	4	14	5	3	1
4	25	13	12	10	0	18	6	1	0
5	**22**	**10**	**12**	**8**	**0**	**9**	**10**	**3**	**0**
6	23	11	11	2	5	15	5	2	1
7	24	13	11	3	1	13	7	3	1
8	24	13	11	0	0	9	7	6	2
9	25	13	12	2	4	11	8	4	2
10	26	15	11	9	0	21	2	1	1
11	22	15	7	0	0	11	6	4	1
12	25	12	13	4	4	14	4	4	3
13	24	12	12	4	4	14	6	2	2
14	9	0	9	9	0	3	3	3	0
15	9	5	4	9	0	6	3	0	0

The inclusion classroom in the 6th grade where the collaborative model is being implemented is CR number 5. In that classroom, there is a general education teacher, a special education teacher, and a full-time paraprofessional or classroom aide. The eight special education students in that classroom have the following classifications under the special education code:

Student #1 - Other Health Impaired
Student #2 - Multiply Disabled
Student #3 - Specific Learning Disability
Student #4 - Specific Learning Disability
Student #5 - Specific Learning Disability
Student #6 - Multiply Disabled
Student #7 - Other Health Impaired
Student #8 - Specific Learning Disability

Design/Data Collection

The standardized test data collected from this population will be used to determine the academic effect of inclusion on the general education students in inclusion classrooms. The researcher will use post-hoc test data from the Terranova Assessment by CTB McGraw Hill and the New Jersey Assessment of Skills and Knowledge (NJASK4) to make several comparisons.

The researcher will conduct independent cross-sectional studies of 2003-2004 Terranova results for total Mathematics and total Language Arts Literacy scores for the 5^{th}- and 6^{th}-grade students. Independent-sample, two-tailed t-tests will be used to compare the means of the following groups:

- disabled students in total compared to general education students in total;
- disabled students in inclusive classrooms compared to non-disabled students in the same inclusive classrooms;
- non-disabled students and disabled students combined in co-teaching classrooms compared to students in traditional classroom settings at the same grade level;
- non-disabled students taught by special education and general education teachers in co-teaching teams compared to non-disabled peers taught in traditional general education classroom settings at the same grade level;
- disabled students taught by special education and general education teachers in co-teaching teams compared to disabled students taught in traditional special education classroom settings.

The researcher will also conduct independent cross-sectional studies of

2003-2004 NJASK4 results for Mathematics and Language Arts Literacy scores for the 4th-grade students. Independent-sample, two-tailed t-tests will be used to compare the means of the following groups:

- disabled students in total compared to general education students in total;
- disabled students in inclusive classrooms compared to non-disabled students in the same inclusive classrooms;
- non-disabled students and disabled students combined in co-teaching classrooms compared to students in traditional classroom settings at the same grade level;
- non-disabled students taught by special education and general education teachers in co-teaching teams compared to non-disabled peers taught in traditional general education classroom settings at the same grade level;
- disabled students taught by special education and general education teachers in co-teaching teams compared to disabled students taught in traditional special education classroom settings.

Using a t-test for two matched samples to compare the means, the researcher will conduct a longitudinal analysis of 2002-2003 and 2003-2004 Terranova test scores of the same student population. Once again, the following groups will be analyzed:

- disabled students in total compared to general education students in total;
- disabled students in inclusive classrooms compared to non-disabled students in the same inclusive classrooms;
- non-disabled students and disabled students combined in co-teaching classrooms compared to students in traditional classroom settings at the same grade level;

- non-disabled students taught by special education and general education teachers in co-teaching teams compared to non-disabled peers taught in traditional general education classroom settings at the same grade level;
- disabled students taught by special education and general education teachers in co-teaching teams compared to disabled students taught in traditional special education classroom settings.

Data Sources/Instruments

In addition to demographic data collected from the local school district and from the New Jersey Department of Education website (http://education.state.nj.us), the bulk of the data collected in this study comes from two main sources: the New Jersey Assessment of Skills and Knowledge (NJASK4) and CTB McGraw-Hill's Terranova test.

All tests were scored by outside agencies, either through the NJDOE or CTB McGraw-Hill. All test data used is retrieved in the public domain and individual student names will not be necessary for the testing analysis. Students will be coded by their educational group (1 for general education student and 2 for special education student) and their inclusion group (1 for non-inclusive classroom and 2 for inclusive classroom).

Data Analysis

The quantitative data collected in this study will be used to draw conclusions for policy and practice regarding inclusion and the effect of this type of programming on student achievement as measured by standardized test scores.

The summary statistics and graphical representations have been generated by Statistics Package for the Social Sciences (SPSS) and Microsoft Excel. The inferential statistics used in this study are independent, single-sample, two-tailed t-tests and t-tests for two matched samples.

In running these tests, the researcher will be able to determine if the deviation between the mean Terranova and NJASK4 scores for general education students in inclusive settings compared to the mean Terranova and NJASK4 scores for general education and special education students in non-inclusive or traditional settings is significant. To reiterate, the key hypothesis or null hypothesis for this study is as follows:

H_O: Inclusion, as defined in this study, has no impact on general education elementary students' academic achievement as measured by standardized tests.

This hypothesis is tested against the alternative:

H_A: Inclusion, as defined in this study, has an impact on general education elementary students' academic achievement as measured by standardized tests.

Significance at the .05 level will be the determiner to reject the null hypothesis or accept the alternative.

Summary

The goal of the methodology as developed for this study is to add statistical data to the body of knowledge regarding inclusion and provide educational leaders and policy

makers with the information necessary to make informed decisions regarding allocation of resources. As stated in both the introduction and the literature review, the current body of knowledge is largely qualitative in nature and raises concerns for the need for more quantitative data.

In addition to retaining the null hypothesis, the researcher's goal is to answer the following questions:

1. What does standardized testing data suggest regarding the effectiveness of inclusion on student achievement and the allocation of administrative time, effort, and resources?
2. What are the differences on standardized tests when disabled students in inclusive classrooms are compared to non-disabled students in the same inclusive classrooms?
3. What are the differences on standardized tests when non-disabled students and disabled students are combined in co-teaching classrooms and compared to students in traditional classroom settings at the same grade level?
4. What are the differences on standardized tests when non-disabled students taught by special education and general education teachers in co-teaching teams are compared to non-disabled peers taught in traditional general education classroom settings at the same grade level?
5. What are the differences on standardized tests when disabled students taught by special education and general education teachers in co-teaching teams are compared to disabled students taught in traditional special education classroom settings?

The data generated from the instruments regarding these items follow in Chapter 4, Analysis of the Data.

Chapter 4

ANALYSIS OF THE DATA

The purpose of this study was to investigate the impact of inclusive school environments on the academic achievement of elementary-level general education students as measured by standardized test data over single and multi-year periods. The study looked at post-hoc standardized testing data for elementary-grade students in one South Jersey, DE District Factor Group elementary school resulting in recommendations for policy, practice, and future research.

The quantitative findings of the research compared the scale-score means of both general education and special education students in traditional and inclusive teaching environments. The research compared several student populations in grades 4, 5, and 6 using NJASK and Terranova scores for both Language Arts Literacy (LAL) and Mathematics.

The key hypothesis or null hypothesis for this study was as follows:

H_O: Inclusion, as defined in this study, has no impact on general education elementary students' academic achievement as measured by standardized tests.

This hypothesis was tested against the alternative:

H_A: Inclusion, as defined in this study, has an impact on general education elementary students' academic achievement as measured by standardized tests.

Significance at the .05 level was the determiner to reject the null hypothesis or accept the alternative.

SPSS 13.0 was used to analyze the raw data from the assessments. Independent-sample, two-tailed t-tests, and a t-test for two matched samples were used to compare means. The results of the four studies (three cross-sectional and one longitudinal) are examined in this chapter. Tables are included to summarize the results.

Analysis #1 - 5th-Grade LAL and Mathematics: Terranova

In the first analysis, cross-sectional sample data from the 2003-2004 Terranova Assessment was collected and analyzed from 319 5th-grade students for both LAL and Mathematics. Independent-sample, two-tailed t-tests were used to compare the means of five different groups – Group 1: Total Special Education Population v. Total General Education Population; Group 2: Special Education Students in Inclusion Groups v. General Education Students in Inclusion Groups; Group 3: Combined Inclusion Students v. Combined Non-Inclusion Students; Group 4: General Education Inclusion Students v. General Education Non-Inclusion Students; and Group 5: Special Education Inclusion Students v. Special Education Non-Inclusive Students.

Group 1

Comparing the means of Group 1, 5th-grade general education and special education students in Language Arts Literacy, yielded the results shown below.

Table 4.11LAL

George L. Hess Elementary School – 5th-Grade Inclusive and Non-Inclusive Students (Language Arts Literacy)

Ed. Category	N	Mean	t-value	Sig. (2-tailed)
General Ed.	266	670.44	9.179	.000
Special Ed.	53	634.66	9.179	.000

The mean for the 266 general education students was 670.44, and the mean for the 53 special education students at this grade level was 634.66. The mean difference between these two groups was 35.776, which is statistically significant at p=.000.

Comparing the means of Group 1, 5th-grade general education and special education students in Mathematics, yielded the results shown below.

Table 4.11M

George L. Hess Elementary School – 5th-Grade Inclusive and Non-Inclusive Students (Mathematics)

Ed. Category	N	Mean	t-value	Sig. (2-tailed)
General Ed.	266	669.40	9.642	.000
Special Ed.	53	620.04	9.642	.000

The mean for the 266 general education students was 669.40, and the mean for the 53 special education students at this grade level was 620.04. The mean difference between these two groups was 49.361, which is statistically significant at p=.000.

Group 2

Comparing the means of Group 2, 5th-grade general education and special education students in inclusion groups in Language Arts Literacy, yielded the results shown below.

Table 4.12LAL

George L. Hess Elementary School – 5th-Grade Special Education Inclusive Students and General Education Inclusive Students (Language Arts Literacy)

Ed. Category	N	Mean	t-value	Sig. (2-tailed)
General Ed. Inclusive	15	670.00	3.759	.001
Special Ed. Inclusive	5	635.60	3.759	.001

The mean for the 15 general education students was 670.00, and the mean for the five special education students at this grade level was 635.60. The mean difference between these two groups was 34.400, which is statistically significant at p=.001.

Comparing the means of Group 2, 5th-grade general education and special education students in inclusion groups in Mathematics, yielded the results shown below.

Table 4.12M

George L. Hess Elementary School – 5th-Grade Special Education Inclusive Students and General Education Inclusive Students (Mathematics)

Ed. Category	N	Mean	t-value	Sig. (2-tailed)
General Ed. Inclusive	15	675.80	4.609	.000
Special Ed. Inclusive	5	614.00	4.609	.000

The mean for the 15 general education students was 675.80, and the mean for the five special education students at this grade level was 614.00. The mean difference between these two groups was 61.800, which is statistically significant at p=.000.

Group 3

Comparing the means of Group 3, 5th-grade combined general education and special education students in inclusion groups and combined general education and special education students in non-inclusion groups in Language Arts Literacy, yielded the results shown below.

Table 4.13LAL

George L. Hess Elementary School – 5th-Grade Combined Inclusive and Non-Inclusive Groups (Language Arts Literacy)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	299	664.70	.490	.624
Inclusive	20	661.40	.490	.624

The mean for the 299 non-inclusive students was 664.70, and the mean for the 20 inclusive students at this grade level was 661.40. The mean difference between these two groups was 3.299, which is not statistically significant at p=.624.

Comparing the means of Group 3, 5th-grade combined general education and special education students in inclusion groups and combined general education and special education students in non-inclusion groups in Mathematics, yielded the results shown below.

Table 4.13M

George L. Hess Elementary School – 5th-Grade Combined Inclusive and Non-Inclusive Groups (Mathematics)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	299	661.25	.101	.919
Inclusive	20	660.35	.101	.919

The mean for the 299 non-inclusive students was 661.25, and the mean for the 20 inclusive students at this grade level was 660.35. The mean difference between these two groups was .904, which is not statistically significant at p=.919.

Group 4

Comparing the means of Group 4, 5th-grade general education inclusion students and general education non-inclusion students in Language Arts Literacy, yielded the results shown below.

Table 4.14LAL

George L. Hess Elementary School – 5th-Grade General Education Inclusive and General Education Non-Inclusive Groups (Language Arts Literacy)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	251	670.46	.112	.912
Inclusive	15	670.00	.112	.912

The mean for the 251 non-inclusive general education students was 670.46, and the mean for the 15 inclusive general education students at this grade level was 670.00.

The mean difference between these two groups was .462, which is not statistically significant at p=.912.

Comparing the means of Group 4, 5th-grade general education inclusion students and general education non-inclusion students in Mathematics, yielded the results shown below.

Table 4.14M

George L. Hess Elementary School – 5th-Grade General Education Inclusive and General Education Non-Inclusive Groups (Mathematics)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	251	669.02	-.769	.442
Inclusive	15	675.80	-.769	.442

The mean for the 251 non-inclusive general education students was 669.02, and the mean for the 15 inclusive general education students at this grade level was 675.80. The mean difference between these two groups was 6.78, which is not statistically significant at p=.442.

Group 5

Comparing the means of Group 5, 5th-grade special education inclusion students and special education non-inclusion students in Language Arts Literacy, yielded the results shown below.

Table 4.15LAL

George L. Hess Elementary School – 5th-Grade Special Education Inclusive and Special Education Non-Inclusive Groups (Language Arts Literacy)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	48	634.56	-.082	.935
Inclusive	5	635.60	-.082	.935

The mean for the 48 non-inclusive special education students was 634.56, and the mean for the five inclusive special education students at this grade level was 635.60. The mean difference between these two groups was -1.038, which is not statistically significant at p=.935.

Comparing the means of Group 5, 5th-grade special education inclusion students and special education non-inclusion students in Mathematics, yielded the results shown below.

Table 4.15M

George L. Hess Elementary School – 5th-Grade Special Education Inclusive and Special Education Non-Inclusive Groups (Mathematics)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	48	620.67	.368	.714
Inclusive	5	614.00	.368	.714

The mean for the 48 non-inclusive special education students was 620.67, and the mean for the five inclusive special education students at this grade level was 614.00. The

mean difference between these two groups was 6.667, which is not statistically significant at p=.714.

In the analysis of these five student group comparisons, data from Groups 1 and 2 shows a difference that supports the fact that there is statistical significance in how general education and special education 5th-grade students scored on the Terranova Assessment in both LAL and Mathematics. Whether taught in inclusive or non-inclusive groups, general education students outperformed special education students. In each of the other three student groups, there is no statistically significant difference in the means; therefore, the null hypothesis is retained and the alternative rejected.

Analysis #2 – 6th-Grade LAL and Mathematics: Terranova

In the second analysis, cross-sectional sample data from the 2003-2004 Terranova Assessment was collected and analyzed from 312 6th-grade students for both LAL and Mathematics. Independent-sample, two-tailed t-tests were used to compare the means of five different groups – Group 1: Total Special Education Population v. Total General Education Population; Group 2: Special Education Students in Inclusion Groups v. General Education Students in Inclusion Groups; Group 3: Combined Inclusion Students v. Combined Non-Inclusion Students; Group 4: General Education Inclusion Students v. General Education Non-Inclusion Students; and Group 5: Special Education Inclusion Students v. Special Education Non-Inclusive Students.

Group 1

Comparing the means of Group 1, 6th-grade general education and special education students in Language Arts Literacy, yielded the results shown below.

Table 4.21LAL

George L. Hess Elementary School – 6th-Grade Inclusive and Non-Inclusive Students (Language Arts Literacy)

Ed. Category	N	Mean	t-value	Sig. (2-tailed)
General Ed.	245	676.29	10.338	.000
Special Ed.	67	627.57	10.338	.000

The mean for the 245 general education students was 676.29, and the mean for the 67 special education students at this grade level was 627.57. The mean difference between these two groups was 48.719, which is statistically significant at p=.000.

Comparing the means of Group 1, 6th-grade general education and special education students in Mathematics, yielded the results shown below.

Table 4.21M

George L. Hess Elementary School – 6th-Grade Inclusive and Non-Inclusive Students (Mathematics)

Ed. Category	N	Mean	t-value	Sig. (2-tailed)
General Ed.	245	695.29	9.180	.000
Special Ed.	67	636.60	9.180	.000

The mean for the 245 general education students was 695.29, and the mean for the 67 special education students at this grade level was 636.60. The mean difference between these two groups was 58.697, which is statistically significant at p=.000.

Group 2

Comparing the means of Group 2, 6th-grade general education and special education students in inclusion groups in Language Arts Literacy, yielded the results shown below.

Table 4.22LAL

George L. Hess Elementary School – 6th-Grade Special Education Inclusive Students and General Education Inclusive Students (Language Arts Literacy)

Ed. Category	N	Mean	t-value	Sig. (2-tailed)
General Ed. Inclusive	12	672.25	4.019	.001
Special Ed. Inclusive	7	606.14	4.019	.001

The mean for the 12 general education students was 672.25, and the mean for the seven special education students at this grade level was 606.14. The mean difference between these two groups was 66.107, which is statistically significant at p=.001.

Comparing the means of Group 2, 6th-grade general education and special education students in inclusion groups in Mathematics, yielded the results shown below.

Table 4.22M

George L. Hess Elementary School – 6th-Grade Special Education Inclusive Students and General Education Inclusive Students (Mathematics)

Ed. Category	N	Mean	t-value	Sig. (2-tailed)
General Ed. Inclusive	12	680.83	4.127	.001
Special Ed. Inclusive	7	622.14	4.127	.001

The mean for the 12 general education students was 680.83, and the mean for the seven special education students at this grade level was 622.14. The mean difference between these two groups was 58.69, which is statistically significant at p=.001.

Group 3

Comparing the means of Group 3, 6th-grade combined general education and special education students in inclusion groups and combined general education and special education students in non-inclusion groups in Language Arts Literacy, yielded the results shown below.

Table 4.23LAL

George L. Hess Elementary School – 6th-Grade Combined Inclusive and Non-Inclusive Groups (Language Arts Literacy)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	293	666.99	2.048	.041
Inclusive	19	647.89	2.048	.041

The mean for the 293 non-inclusive students was 666.99, and the mean for the 19 inclusive students at this grade level was 647.89. The mean difference between these two groups was 19.092, which is statistically significant at p=.041.

Comparing the means of Group 3, 6th-grade combined general education and special education students in inclusion groups and combined general education and special education students in non-inclusion groups in Mathematics, yielded the results shown below.

Table 4.23M

George L. Hess Elementary School – 6th-Grade Combined Inclusive and Non-Inclusive Groups (Mathematics)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	293	684.21	2.141	.033
Inclusive	19	659.21	2.141	.033

The mean for the 293 non-inclusive students was 684.21, and the mean for the 19 inclusive students at this grade level was 659.21. The mean difference between these two groups was 25.001m which is statistically significant at p=.033.

Group 4

Comparing the means of Group 4, 6th-grade general education inclusion students and general education non-inclusion students in Language Arts Literacy, yielded the results shown below.

Table 4.24LAL

George L. Hess Elementary School – 6th-Grade General Education Inclusive and General Education Non-Inclusive Groups (Language Arts Literacy)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	233	676.49	.412	.681
Inclusive	12	672.25	.412	.681

The mean for the 233 non-inclusive general education students was 676.49, and the mean for the 12 inclusive general education students at this grade level was 672.25.

The mean difference between these two groups was 4.244, which is not statistically significant at p=.681.

Comparing the means of Group 4, 6th-grade general education inclusion students and general education non-inclusion students in Mathematics, yielded the results shown below.

Table 4.24M

George L. Hess Elementary School – 6th-Grade General Education Inclusive and General Education Non-Inclusive Groups (Mathematics)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	233	696.04	1.152	.250
Inclusive	12	680.83	1.152	.250

The mean for the 233 non-inclusive general education students was 696.04, and the mean for the 12 inclusive general education students at this grade level was 680.83. The mean difference between these two groups was 15.205, which is not statistically significant at p=.250.

Group 5

Comparing the means of Group 5, 6th-grade special education inclusion students and special education non-inclusion students in Language Arts Literacy, yielded the results shown below.

Table 4.25LAL

George L. Hess Elementary School – 6th-Grade Special Education Inclusive and Special Education Non-Inclusive Groups (Language Arts Literacy)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	60	630.07	1.901	.062
Inclusive	7	606.14	1.901	.062

The mean for the 60 non-inclusive special education students was 630.07, and the mean for the seven inclusive special education students at this grade level was 606.14. The mean difference between these two groups was 23.924, which is not statistically significant at p=.062.

Comparing the means of Group 5, 6th-grade special education inclusion students and special education non-inclusion students in Mathematics, yielded the results shown below.

Table 4.25M

George L. Hess Elementary School – 6th-Grade Special Education Inclusive and Special Education Non-Inclusive Groups (Mathematics)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	60	638.28	1.049	.298
Inclusive	7	622.14	1.049	.298

The mean for the 60 non-inclusive special education students was 638.28, and the mean for the seven inclusive special education students at this grade level was 622.14.

The mean difference between these two groups was 16.140, which is not statistically significant at p=.298.

In the analysis of these five student group comparisons, data from Groups 1, 2, and 3 shows difference that supports a statistical significance in how general education and special education 6th-grade students scored on the Terranova Assessment in both LAL and Mathematics. Whether taught in inclusive or non-inclusive groups, general education students outperformed special education students. Different from the 5th-grade Terranova scores and the 4th-Grade NJASK sores conducted in the other studies, the 6th-grade 2003-04 Terranova scores do show a significant difference in the means between non-inclusive and inclusive classrooms. A calculated effect size of .01 indicates little correlation between the pairs (inclusive classrooms and non-inclusive classrooms) to interpret the proportion of the variance in the means. That resultant effect size, coupled with the fact that there is no statistically significant difference in the means, allows the null hypothesis to be retained and the alternative rejected.

Analysis #3 – 4th-Grade LAL and Mathematics: NJASK4

In the third analysis, cross-sectional sample data from the 2003-2004 NJASK4 Assessment was collected and analyzed from 316 4th-grade students for both LAL and Mathematics. Independent-sample, two-tailed t-tests were used to compare the means of five different groups – Group 1: Total Special Education Population v. Total General Education Population; Group 2: Special Education Students in Inclusion Groups v. General Education Students in Inclusion Groups; Group 3: Combined Inclusion Students v. Combined Non-Inclusion Students; Group 4: General Education Inclusion Students v.

General Education Non-Inclusion Students; and Group 5: Special Education Inclusion Students v. Special Education Non-Inclusive Students.

Group 1

Comparing the means of Group 1, 4th-grade general education and special education students in Language Arts Literacy, yielded the results shown below.

Table 4.31LAL

George L. Hess Elementary School – 4th-Grade Inclusive and Non-Inclusive Students (Language Arts Literacy)

Ed. Category	N	Mean	t-value	Sig. (2-tailed)
General Ed.	273	217.56	6.609	.000
Special Ed.	42	188.52	6.609	.000

The mean for the 273 general education students was 217.56, and the mean for the 42 special education students at this grade level was 188.52. The mean difference between these two groups was 29.033, which is statistically significant at p=.000.

Comparing the means of Group 1, 4th-grade general education and special education students in Mathematics, yielded the results shown below.

Table 4.31M

George L. Hess Elementary School – 4th-Grade Inclusive and Non-Inclusive Students (Mathematics)

Ed. Category	N	Mean	t-value	Sig. (2-tailed)
General Ed.	273	221.37	3.745	.000
Special Ed.	43	195.84	3.745	.000

The mean for the 273 general education students was 221.37, and the mean for the 43 special education students at this grade level was 195.84. The mean difference between these two groups was 25.536, which is statistically significant at p=.000.

Group 2

Comparing the means of Group 2, 4th-grade general education and special education students in inclusion groups in Language Arts Literacy, yielded the results shown below.

Table 4.32LAL

George L. Hess Elementary School – 4th-Grade Special Education Inclusive Students and General Education Inclusive Students (Language Arts Literacy)

Ed. Category	N	Mean	t-value	Sig. (2-tailed)
General Ed. Inclusive	16	209.50	1.071	.299
Special Ed. Inclusive	3	191.33	1.071	.299

The mean for the 16 general education students was 209.50, and the mean for the three special education students at this grade level was 191.33. The mean difference between these two groups was 18.167, which is not statistically significant at p=.299.

Comparing the means of Group 2, 4th-grade general education and special education students in inclusion groups in Mathematics, yielded the results shown below.

Table 4.32M

George L. Hess Elementary School – 4th-Grade Special Education Inclusive Students and General Education Inclusive Students (Mathematics)

Ed. Category	N	Mean	t-value	Sig. (2-tailed)
General Ed. Inclusive	16	216.13	1.596	.128
Special Ed. Inclusive	4	187.50	1.596	.128

The mean for the 16 general education students was 216.13, and the mean for the four special education students at this grade level was 187.50. The mean difference between these two groups was 28.63, which is not statistically significant at p=.128.

Group 3

Comparing the means of Group 3, 4th-grade combined general education and special education students in inclusion groups and combined general education and special education students in non-inclusion groups in Language Arts Literacy, yielded the results shown below.

Table 4.33LAL

George L. Hess Elementary School – 4th-Grade Combined Inclusive and Non-Inclusive Groups (Language Arts Literacy)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	296	214.14	1.416	.158
Inclusive	19	206.63	1.416	.158

The mean for the 296 non-inclusive students was 214.14, and the mean for the 19 inclusive students at this grade level was 206.63. The mean difference between these two groups was 7.5072, which is not statistically significant at p=.158.

Comparing the means of Group 3, 4th-grade combined general education and special education students in inclusion groups and combined general education and special education students in non-inclusion groups in Mathematics, yielded the results shown below.

Table 4.33M

George L. Hess Elementary School – 4th-Grade Combined Inclusive and Non-Inclusive Groups (Mathematics)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	296	218.41	1.007	.315
Inclusive	20	210.40	1.007	.315

The mean for the 296 non-inclusive students was 218.41, and the mean for the 20 inclusive students at this grade level was 210.40. The mean difference between these two groups was 8.005, which is not statistically significant at p=.315.

Group 4

Comparing the means of Group 4, 4th-grade general education inclusion students and general education non-inclusion students in Language Arts Literacy, yielded the results shown below.

Table 4.34LAL

George L. Hess Elementary School – 4th-Grade General Education Inclusive and General Education Non-Inclusive Groups (Language Arts Literacy)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	257	218.06	1.772	.078
Inclusive	16	209.50	1.772	.078

The mean for the 257 non-inclusive general education students was 218.06, and the mean for the 16 inclusive general education students at this grade level was 209.50. The mean difference between these two groups was 8.558, which is not statistically significant at p=.078.

Comparing the means of Group 4, 4th-grade general education inclusion students and general education non-inclusion students in Mathematics, yielded the results shown below.

Table 4.34M

George L. Hess Elementary School – 4th-Grade General Education Inclusive and General Education Non-Inclusive Groups (Mathematics)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	257	221.70	.685	.494
Inclusive	16	216.13	.685	.494

The mean for the 257 non-inclusive general education students was 221.70, and the mean for the 16 inclusive general education students at this grade level was 216.13.

The mean difference between these two groups was 5.575, which is not statistically significant at p=.494.

Group 5

Comparing the means of Group 5, 4th-grade special education inclusion students and special education non-inclusion students in Language Arts Literacy, yielded the results shown below.

Table 4.35LAL

George L. Hess Elementary School – 4th-Grade Special Education Inclusive and Special Education Non-Inclusive Groups (Language Arts Literacy)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	39	188.31	-.181	.857
Inclusive	3	191.33	-.181	.857

The mean for the 39 non-inclusive special education students was 188.31, and the mean for the three inclusive special education students at this grade level was 191.33. The mean difference between these two groups was -3.026, which is not statistically significant at p=.857.

Comparing the means of Group 5, 4th-grade special education inclusion students and special education non-inclusion students in Mathematics, yielded the results shown below.

Table 4.35M

George L. Hess Elementary School – 4th-Grade Special Education Inclusive and Special Education Non-Inclusive Groups (Mathematics)

Inclusion Classification	N	Mean	t-value	Sig. (2-tailed)
Non-Inclusive	39	196.69	.404	.688
Inclusive	4	187.50	.404	.688

The mean for the 39 non-inclusive special education students was 196.69, and the mean for the four inclusive special education students at this grade level was 187.50. The mean difference between these two groups was 9.192, which is not statistically significant at p=.688.

In the analysis of these five student group comparisons, data from Groups 1 and 2 shows a difference that supports a statistical significance in how general education and special education 4th-grade students scored on the NJASK4 Assessment in both LAL and Mathematics. Whether taught in inclusive or non-inclusive groups, general education students outperformed special education students. In the other three student groups, there is no statistically significant difference in the means; therefore, the null hypothesis is retained and the alternative rejected.

Analysis #4 – 02-03 and 03-04 LAL and Mathematics: Terranova

In the fourth analysis, a longitudinal analysis of 2002-2003 and 2003-2004 Terranova Assessment scores collected from 259 students for both LAL and Mathematics was conducted. The 259 students represent those that were enrolled in the school system

and took the test in both the spring 2003 and 2004 test administrations. A t-test for two matched samples was used to compare the means.

The matched-sample, two-tailed t-tests were used to compare the means of five different groups – Group 1: All 6th-Grade Students v. All 5th-Grade Students; Group 2: All 6th-Grade General Education Students v. All 5th-Grade General Education Students; Group 3: All 6th-Grade Special Education Students v. All 5th Grade-Special Education Students; Group 4: All 6th-Grade Non-Inclusive Students v. All 5th-Grade Non-Inclusive Students; and Group 5: All 6th-Grade Inclusive Students v. All 5th-Grade Inclusive Students.

Group 1

Comparing the means of Group 1, Pair 1, all 6th-grade students v. all 5th-grade students in Language Arts Literacy, yielded the results shown below.

Table 4.41LAL

George L. Hess Elementary School – All 6th-Grade Students v. All 5th-Grade Students (Language Arts Literacy)

Pair 1	N	Mean	t-value	Sig. (2-tailed)
6th Grade	259	665.86	1.146	.253
5th Grade	259	664.20	1.146	.253

The mean for the 259 6th-grade students was 665.86, and the mean for the 259 5th-grade students was 664.20. The mean difference between these two pairs was 1.660, which is not statistically significant at p=.253.

Comparing the means of Group 1, Pair 2, all 6th-grade students v. all 5th-grade students in Mathematics, yielded the results shown below.

Table 4.41M

George L. Hess Elementary School – All 6th-Grade Students v. All 5th-Grade Students (Mathematics)

Pair 2	N	Mean	t-value	Sig. (2-tailed)
6th Grade	259	684.29	14.311	.000
5th Grade	259	656.29	14.311	.000

The mean for the 259 6th-grade students was 684.29, and the mean for the 259 5th-grade students was 656.29. The mean difference between these two pairs was 28.000, which is statistically significant at p=.000.

Group 2

Comparing the means of Group 2, Pair 1, all 6th-grade general education students v. all 5th-grade general education students in Language Arts Literacy, yielded the results shown below.

Table 4.42LAL

George L. Hess Elementary School – All 6th-Grade General Education Students v. All 5th-Grade General Education Students (Language Arts Literacy)

Pair 1	N	Mean	t-value	Sig. (2-tailed)
6th Grade	203	676.37	1.362	.175
5th Grade	203	674.27	1.362	.175

The mean for the 203 6th-grade students was 676.37, and the mean for the 203 5th-grade students was 674.27. The mean difference between these two pairs was 2.099, which is not statistically significant at p=.175.

Comparing the means of Group 2, Pair 2, all 6th-grade general education students v. all 5th-grade general education students in Mathematics, yielded the results shown below.

Table 4.42M

George L. Hess Elementary School – All 6th-Grade General Education Students v. All 5th-Grade General Education Students (Mathematics)

Pair 2	N	Mean	t-value	Sig. (2-tailed)
6th Grade	203	696.40	13.423	.000
5th Grade	203	668.22	13.423	.000

The mean for the 203 6th-grade students was 696.40, and the mean for the 203 5th-grade students was 668.22. The mean difference between these two pairs was 28.187, which is statistically significant at p=.000.

Group 3

Comparing the means of Group 3, Pair 1, all 6th-grade special education students v. all 5th-grade special education students in Language Arts Literacy, yielded the results shown below.

Table 4.43LAL

George L. Hess Elementary School – All 6th-Grade Special Education Students v. All 5th-Grade Special Education Students (Language Arts Literacy)

Pair 1	N	Mean	t-value	Sig. (2-tailed)
6th Grade	56	627.75	.019	.985
5th Grade	56	627.68	.019	.985

The mean for the 56 6th-grade students was 627.75, and the mean for the 56 5th-grade students was 627.68. The mean difference between these two pairs was .071, which is not statistically significant at p=.985.

Comparing the means of Group 3, Pair 2, all 6th-grade special education students v. all 5th-grade special education students in Mathematics, yielded the results shown below.

Table 4.43M

George L. Hess Elementary School – All 6th-Grade Special Education Students v. All 5th-Grade Special Education Students (Mathematics)

Pair 2	N	Mean	t-value	Sig. (2-tailed)
6th Grade	56	640.36	5.538	.000
5th Grade	56	613.04	5.538	.000

The mean for the 56 6th-grade students was 640.36, and the mean for the 56 5th-grade students was 613.04. The mean difference between these two pairs was 27.321, which is statistically significant at p=.000.

Group 4

Comparing the means of Group 4 Pair 1, all 6th-grade non-inclusive students v. all 5th-grade non-inclusive students in Language Arts Literacy, yielded the results shown below.

Table 4.44LAL

George L. Hess Elementary School – All 6th-Grade Non-Inclusive Students v. All 5th-Grade Non-Inclusive Students (Language Arts Literacy)

Pair 1	N	Mean	t-value	Sig. (2-tailed)
6th Grade	243	666.89	1.443	.150
5th Grade	243	664.79	1.443	.150

The mean for the 243 6th-grade students was 666.89, and the mean for the 243 5th-grade students was 664.79. The mean difference between these two pairs was 2.103, which is not statistically significant at p=.150.

Comparing the means of Group 4, Pair 2, all 6th-grade non-inclusive students v. all 5th-grade non-inclusive students in Mathematics, yielded the results shown below.

Table 4.44M

George L. Hess Elementary School – All 6th-Grade Non-Inclusive Students v. All 5th-Grade Non-Inclusive Students (Mathematics)

Pair 2	N	Mean	t-value	Sig. (2-tailed)
6th Grade	243	685.76	13.840	.000
5th Grade	243	657.52	13.840	.000

The mean for the 243 6th-grade students was 685.76, and the mean for the 243 5th-grade students was 657.52. The mean difference between these two pairs was 28.243, which is statistically significant at p=.000.

Group 5

Comparing the means of Group 5, Pair 1, all 6th-grade inclusive students v. all 5th-grade inclusive students in Language Arts Literacy, yielded the results shown below.

Table 4.45LAL

George L. Hess Elementary School – All 6th-Grade Inclusive Students v. All 5th-Grade Inclusive Students (Language Arts Literacy)

Pair 1	N	Mean	t-value	Sig. (2-tailed)
6th Grade	16	650.13	-.649	.526
5th Grade	16	655.19	-.649	.526

The mean for the 16 6th-grade students was 650.13, and the mean for the 16 5th-grade students was 655.19. The mean difference between these two pairs was -5.063, which is not statistically significant at p=.526.

Comparing the means of Group 5, Pair 2, all 6th-grade inclusive students v. all 5th-grade inclusive students in Mathematics, yielded the results shown below.

Table 4.45M

George L. Hess Elementary School – All 6th-Grade Inclusive Students v. All 5th-Grade Inclusive Students (Mathematics)

Pair 2	N	Mean	t-value	Sig. (2-tailed)
6th Grade	16	661.88	3.644	.002
5th Grade	16	637.56	3.644	.002

The mean for the 16 6th-grade students was 661.88, and the mean for the 16 5th-grade students was 637.56. The mean difference between these two pairs was 24.313, which is statistically significant at p=.002.

In the analysis of these five student group comparisons, Pair 1 data for Language Arts Literacy consistently showed that there was no statistical significance between the means; therefore, the null hypothesis is retained and the alternative rejected. However, with regard to the Pair 2 data for Mathematics, each group comparison of the mean was statistically significant; therefore, the null hypothesis is rejected and the alternative affirmed.

Summary

This chapter presents the findings of this study that investigated the impact of inclusive school environments on the academic achievement of elementary general education students as measured by standardized test data over single- and multi-year periods. One hypothesis was tested using two different assessments and with two forms of statistical analysis.

The key hypothesis, as affirmed in this analysis of the data, states that inclusion as defined in this study has no impact on general education elementary students' academic achievement as measured by standardized tests. The researcher utilized independent t-tests and t-tests for two matched samples to determine if a statistical significance existed between the following groups:

- all disabled students compared to non-disabled students;
- disabled students in inclusive classrooms compared to non-disabled students in the same inclusive classrooms;
- non-disabled students and disabled students combined in co-teaching classrooms compared to students in traditional classroom settings at the same grade level;
- non-disabled students taught by special education and general education teachers in co-teaching teams compared to non-disabled peers taught in traditional general education classroom settings at the same grade level;
- disabled students taught by special education and general education teachers in co-teaching teams compared to disabled students taught in traditional special education classroom settings.

Chapter 5 answers the research questions and provides a summary of the findings and the conclusions that can be drawn from the data. The researcher also makes recommendations for future research, educational policy, and current practice in the field.

Chapter 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to investigate the impact of inclusive school environments on the academic achievement of elementary general education students as measured by standardized test data over single- and multi-year periods. Specifically, the study looked at post-hoc standardized testing data for elementary-grade students in one South Jersey, DE District Factor Group elementary school to provide recommendations for policy, practice, and future research.

In Chapter 1, the researcher presented background regarding the special education system as it relates to inclusive practice, including the problem statement, significance of the study, purpose of the study, hypothesis, research questions, definition of terms, assumptions, limitations, and delimitations. Chapter 2 represents a literature review of the relevant work related to the history of inclusion, the definition of inclusion, the perceptions and attitudes toward inclusion, an overview of the collaborative model for inclusive instruction, and the impact of inclusion on student performance. Chapter 3 focuses on the research design, the method of data collection, and the process for analyzing the data. Specifically, this chapter is broken down into the following sections: Subjects, Design/Data Collection, Data Source/Instruments, Data Analysis Tools, Data Analysis Method, Research Questions, and Summary. In Chapter 4, the researcher presents the quantitative data analysis of the t-test performed on each group and assessment for both Mathematics and Language Arts Literacy. The analysis provides the researcher the ability to retain or reject the null hypothesis. Chapter 5 will answer the

research questions and provide conclusions and recommendations for future research, practice, and policy.

While the history of inclusion has been a long time in the making, it really was not birthed until the Education of All Children Act, renamed in 1990 as the Individuals with Disabilities Act (IDEA), was passed in 1975. In the 26 years between the Education of All Children Act and the No Child Left Behind Act put forth by President George W. Bush, the debate continued with regard to the best methods of teaching students with disabilities, the best tools and curriculum for teaching students with disabilities, and the best place for teaching students for disabilities. Since NCLB and greater emphasis on accountability and cost, the questions have been refined in our data-driven, results-based, assessment-filled educational market to ask whether any of these practices have had an impact on either the general or special education student.

The majority of the current and relevant literature on inclusive practices uses qualitative data. Through surveys, focus groups, and interviews, the literature generally supports the concept that special needs students benefit from inclusion and that even general education students benefit from this educational model (Brinker & Thorpe, 1984; Fisher et. al., 1995; Salend, 2001; Staub & Peck, 1994; Tichenor & Piechuro-Couture, 1998).

However, it is the virtual lack of quantitative data in the literature that drove the researcher to study the effects of inclusion on both Mathematics and Language Arts Literacy achievement in grades 4-6 elementary students. This lack of empirical data, even regarding the effectiveness of inclusion on special education students (Vaughn and Schumm, 1995), let alone general education students, contributes to the fears of parents,

teachers and administrators. The data collected in this study begins to erode previous precepts regarding inclusive practices and the fears of various stakeholders by quantitatively showing how students perform on standardized tests in this setting. The fear that general education students' test scores are negatively affected by the inclusion of students with special needs is not supported by the data collected in this study.

This study was approved by Seton Hall University's Internal Review Board and permission was granted by the Board of Education and Superintendent of Schools to conduct the research in this suburban school district.

Summary

The key hypothesis in this study, that inclusion as defined here has no impact on general education elementary students' academic achievement, was affirmed using both independent and matched-pair T-tests to analyze results from two different assessment tools (Terranova and NJASK4). The overall findings for each of the five group analyses conducted in this research supports both the qualitative research (Hunt, 2000; Kochhar, West, & Taymans, 2000; Salend & Duhaney, 1999) and the limited quantitative research (Brewton, 2005; Fishbaugh & Gunn, 1994; Manset & Semmel, 1997; Sharpe, York, & Knight, 1994) that states inclusion does not negatively effect the general education student. In Brewton, a Seton Hall University dissertation on the effects of inclusive programming on general education middle school students, the researcher conducted a similar study in the area of Mathematics and standardized test scores. The results of this quantitative study also showed no statistically significant differences in the means.

Since research questions 2 through 5 shape the answer for research question 1, *What does standardized testing data suggest regarding the effectiveness of inclusion on student achievement and the allocation of administrative time, effort and resources?*, the analysis will begin with research question 2, *What are the differences on standardized tests when disabled students in inclusive classrooms are compared to non-disabled students in the same inclusive classroom?*

This question is answered through the Group 2 (special education students in inclusive classrooms versus general education students in inclusive classrooms) analysis in Analysis 1 (5^{th}-Grade TN), Analysis 2 (6^{th}-Grade TN), and Analysis 3 (NJASK4). The researcher found that in looking at independent-sample t-tests, the difference in the means between disabled and non-disabled students in the same inclusive classroom was statistically significant for the 5^{th}- and 6^{th}-grade TN assessment with mean differences of 34.4 and 66.10 for LAL and 61.8 and 58.69 for Mathematics (respectively). This difference is consistent with the data regarding general education students in total versus special education students in general. However, in the 4^{th}-grade inclusive classroom, the results showed a mean difference of 18.7 for LAL and 28.63 for Mathematics, which was not statistically significant. Overall, in grades 4 through 6, no matter whether in inclusive classrooms or non-inclusive classrooms, the general education students performed better on standardized tests in both LAL and Mathematics than special education students in those same grades.

In answering the same question using a matched-pair t-test for grades 5 and 6 taking the Terranova Assessment, the researcher found that there was no statistical significance in the means for LAL. However, some of the data showed statistical

significance in means for Mathematics. In Mathematics, the mean differences showed substantial growth between grades 5 and 6 for both general and special education students. This data suggests that the inclusive programming, while not detrimental to the general education student, is also not detrimental to the special education student.

Research question 3 asks, *What are the differences on standardized tests when non-disabled students and disabled students are combined in co-teaching classrooms and are compared to students in traditional classroom settings at the same grade level?*

This question is answered through the Group 3 (combined general and special education inclusive students versus combined general and special education non-inclusive) analysis in Analysis 1 (5^{th}-Grade TN), Analysis 2 (6^{th}-Grade TN), and Analysis 3 (NJASK4). The researcher found that in looking at independent-sample t-tests, the difference in the means between the inclusive classroom and the non-inclusive classroom was not statistically significant in grades 4 and 5 for both LAL and Mathematics. The students in the inclusive classroom did statistically as well as their counterparts in the non-inclusive or traditional classroom. However, the data shows a significant difference in the means for the grade 6 students taking the Terranova in both LAL and Mathematics. In this study, the students in the non-inclusive classroom performed statistically better than their counterparts in the inclusive classroom.

Although there is a statistically significant difference in the means, the purpose of the research was to study the effects of inclusive practices on the general education student. In this case, the researcher also calculated effect size to determine if the size of the group effected the results. An effect size of .20, or 20 percent of a standard deviation, is considered a minimum for significance and .50, or 50 percent of a standard deviation,

would be considered very strong (Slavin, 2003). The researcher used the following formula to calculate the squared-point biserial correlation coefficient (Witte and Witte, 2001) for both Mathematics and Language Arts Literacy:

$$r^2_{pb} = \frac{t^2}{t^2 + df}$$

In Mathematics, the resulting effect size was .01 and in Language Arts Literacy it was also .01, or 1%. In both cases, the results, according to Cohen's Guidelines (Cohen, 1988), suggests that there is only a small effect. Therefore, while the difference in the means is significant, the effect size lacks importance, since only 1% of the variance in the Mathematics and Language Arts Literacy achievement scores can be explained by general education students participating in inclusive programming. Subsequently, the results support the hypothesis that inclusive programming has little if any effect on the general education student as measured by standardized tests.

Analysis 4, a matched-pair t-test for grades 5 and 6 taking the Terranova Assessment, once again showed that there was no significance in LAL. There was, however, a statistically significant difference in the means for Mathematics in both the non-inclusive and inclusive students. With the anomaly being the 6th-grade Terranova scores, the data supports the premise that there is no statistically significant difference in test scores for students taught in the inclusion program versus those taught in the non-inclusive or traditional classroom.

Research question 4 asks, *What are the differences on standardized tests when non-disabled students taught by special education and general education teachers in co-teaching teams are compared to non-disabled peers taught in traditional general education classroom settings at the same grade level?*

This question is answered through the Group 4 (general education students in inclusive settings versus general education students in traditional settings) analysis in Analysis 1 (5th-Grade TN), Analysis 2 (6th-Grade TN), and Analysis 3 (NJASK4). The researcher found that in looking at independent-sample t-tests, the difference in the means between the general education student in the inclusive classroom and the general education student in the non-inclusive classroom was not statistically significant in grades 4, 5, and 6 for both LAL and Mathematics. This question and the resultant data are at the heart of retaining the key hypothesis of this research that inclusion has no significant impact on general education students.

Analysis 4, a matched-pair t-test for grades 5 and 6 taking the Terranova Assessment, once again showed that there was no significance in LAL. There was, however, a statistically significant difference (28.178) in the means for Mathematics. This positive difference, while statistically significant, further supports the premise that the general education student is not harmed as a result of inclusive programming.

Research question 5 asks, *What are the differences on standardized tests when disabled students taught by special education and general education teachers in co-teaching teams are compared to disabled students taught in traditional special education classroom settings?*

This question is answered through the Group 5 (special education students in inclusive settings versus special education students in traditional settings) analysis in Analysis 1 (5th-Grade TN), Analysis 2 (6th-Grade TN), and Analysis 3 (NJASK4). The researcher found that in looking at independent-sample t-tests, the difference in the means between the special education student in the inclusive classroom and the special

education student in the non-inclusive classroom was not statistically significant in grades 4, 5, and 6 for both LAL and Mathematics.

Analysis 4, a matched-pair t-test for grades 5 and 6 taking the Terranova Assessment, once again showed that there was no significance in LAL. There was, however, a statistically significant difference (27.321) in the means for Mathematics. In this case, similar to the general education student, there is a positive increase in the means between 5th and 6th grade, which shows that at a minimum the inclusive program is not harmful to the special education student, either. The increase in either case could be attributed to the teacher, instructional methodology, curriculum and materials, maturity, or a host of other variables established in Chapter 1 of this research.

This data provides the researcher the ability to now respond to research question 1 regarding the effectiveness of inclusion on student achievement and the allocation of administrative time, effort, and resources. The data suggests that inclusive, collaborative instructional practices do not significantly impact the general education student. If there is a statistical significance in any of the analysis, it shows the positive effect on student achievement.

Conclusion

Data regarding student achievement in Language Arts Literacy and Mathematics in inclusive and non-inclusive settings was collected and analyzed by looking at 2003-2004 5th-and 6th-grade test data from the Terranova Assessment and 2003-2004 4th-grade test data from the New Jersey Assessment of Skills and Knowledge. In addition, data was collected from the Terranova Assessment to assess performance over a two-year

period, 2002-2003 and 2003-2004. This synthesized data provided implications for educational policy makers, practitioners, and future research.

The overall findings of this study retained the null or key hypothesis, that inclusion as defined in this study has no impact on general education elementary students' academic achievement as measured by standardized tests. A significance at the .05 level was used as the determiner to reject the null hypothesis or accept the alternative. The researcher hopes that these findings will add to the body of research and help provide answers to the question of inclusive instructional practice. More research is needed at the middle and high school grades.

Recommendations for Policy/Practice

Considering that the current research, including this data, supports the key hypothesis that general education students are not negatively impacted in an inclusive classroom and that special education students also benefit from this type of classroom, policy makers should continue to fund this type of programming. Policy makers should continue to support professional development for the practitioners (faculty and staff) in the areas of effective collaborative teaching models, instructional methodologies for diverse learners, classroom management approaches, curriculum development and training in understanding student performance assessments.

In addition, both policy makers and practitioners need to become familiar with the current research to be able to educate themselves and the school community about the effects of inclusion. Through administrative meetings, staff meetings, board meetings, district publications, parent meetings, and community meetings, the research should be

disseminated to better inform and educate the community. Policy makers in higher education need to consider the inclusive classroom in their pre-service training programs and certification programs. With the infusion of more special needs students in the general school setting, there is a need for general education teachers to receive similar training regarding special education teaching techniques and inclusive practice. Lastly, while the research needs to continue to be collected and tracked over various grades, multiple districts, and longer periods of time, policy makers and practitioners should not only consider maintaining existing inclusive programs, but they should also explore ways to expand and implement the program to other grades.

Recommendations for Further Research

As has been noted in earlier chapters, this research is based on data from one school in a single region of New Jersey and the United States. Subsequently, there is a need for further research in the area of inclusion and related topics. Those recommendations are as follows:

- replicate this study in other similar districts to see if the findings are similar;
- replicate this study in urban and rural districts;
- replicate this study in middle and high school grades;
- conduct studies that include pre- and post-testing;
- conduct more extensive longitudinal studies to see the effect of this programming over longer periods of time;

- conduct research to further clarify the definition of *in-class support* and the nature of the students (both general and special education) included in this model;
- conduct research on various inclusive models, the expansion of required resources, and the fiscal impact on school budgets;
- expand the study to include other academic disciplines beyond Language Arts Literacy and Mathematics;
- expand the study to include other geographic regions within the New Jersey, the rest of the United States, and in other countries;
- expand the study to multiple districts or counties to create larger sample sizes to enhance validity and reliability;
- include other forms of quantifiable data such as report card grades and locally created assessments in the analysis; and
- include qualitative factors into the analysis such as curriculum, class size, parental and community support, administrative support, teacher relationships, teacher experience, professional development, and other attitudes and perceptions.

In closing, this research provided data to study the impact of inclusion on the general education student through an analysis of standardized test data in Language Arts Literacy and Mathematics. The researcher found no significant negative differences in the test scores analyzed when comparing general education students taught in inclusive environments versus those taught in traditional general education classrooms. It can be

concluded that both general education and special education students can learn and are successful as measured by standardized tests in the inclusive setting.

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Appendices

Appendix A

Letter of Solicitation

Appendix A
Inquiry Letter – Hamilton Township

Ms. Sharon Riordan, Superintendent
5801 Third Street
Mays Landing, NJ 08330

Thursday, January 20, 2005

Dear Ms. Riordan:

With the budget season upon us I know my letter comes at perhaps an inopportune time. However, as you know I have been working for the past 3 years on my doctorate out of Seton Hall University and I have completed all of my coursework. I am now in the dissertation phase and very much looking forward to completing it.

During my time in Hamilton Township I had the opportunity to work with many fine educators to co-develop a program you now know as TFS or Teaching for Success. Inclusive education and in particular providing policy makers (administrators and Board of Education members) with quantitative data for good decision-making with regard to inclusive education has become the focus of my research.

There is a growing body of research supporting the co-teaching approach utilized in your district. That qualitative research (survey data, focus groups, anecdotal collections, case studies, etc...) clearly shows that many students, parents, teachers and administrators feel that programs such as yours can be very beneficial to both the general education and special education student.

However, what is largely lacking in the research is quantifiable data to show that the inclusion programs are in fact helping to improve student achievement. My research is designed to look specifically at improvement as measured by standardized testing data. By analyzing testing data in a given year as well as longitudinally I will be able to see if there is an effect (positive or negative) on student performance.

To that end, I believe that research such as mine will provide administrators and Boards with the critical data to make informed decisions on how to best utilize resources in very difficult financial times and subsequently be able to make student-centered program decisions based on sound research methods.

I am aware that Hamilton Township has a policy regarding research projects and would respectfully ask for an opportunity to meet with you and a committee of the Board or perhaps the full Board to see if my research can be conducted in your district. Hamilton Township's demographics and programs are ideal for this type of research. The district is large enough, diverse enough, and has a history of inclusive practice.

Should you be interested in meeting, at that time I can certainly provide you greater detail regarding the scope of the research, the methodology and tools I will be using to conduct the study. Also, I would be happy to answer any specific questions or concerns you or the Board may have. It would be a great pleasure to work with you and the Hamilton Township Schools again in this professional endeavor.

Thank you for your consideration during this busy time for you and the Board. I hope your construction project is going well and I look forward to speaking with you soon.

Sincerely,

Scott P. McCartney

Scott P. McCartney

Appendix B

Letter of Approval (HT)

Hamilton Township Public Schools

5801 Third Street, Mays Landing, Atlantic County, New Jersey 08330 • Fax (609) 625-4847

Martha J. Jamison
School Business Administrator
Telephone: (609) 625-9393

Sharon C. Riordan
Superintendent
Telephone: (609) 625-6595

Virginia MacBrair
Curriculum Supervisor
Telephone: (609) 625-6602

February 4, 2005

Mr. Scott McCartney, Superintendent
Downe Township Elementary School District
220 Main Street
Newport, NJ 08345

Dear Scott:

The Hamilton Township Board of Education approved your request, at its February 1, 2005 meeting, to conduct a doctoral research project in our school district using our Teaching for Success program to study academic growth in both special education and general education students, as measured by standardized test data. As you well know, student test data is confidential information and no individual student data can be identifiable in your study results. Additionally, the Board of Education has requested that you make a presentation of your study results at a Hamilton Township Board of Education meeting. I assured the Board that you would be more than willing to do so.

I wish you success with your project and, too, look forward to your results.

With warm regards,

Sharon C. Riordan

Sharon C. Riordan
Superintendent

SCR:kao

cc: Hamilton Township Board of Education
Glenn Martins
Ginger MacBrair

Appendix C

Letter of Approval (IRB – SHU)

SETON HALL UNIVERSITY

1 8 5 6

May 4, 2005

Scott McCartney
9 Windchime Road
Egg Harbor Township, NJ 08234

Dear Mr McCartney,

The Seton Hall University Institutional Review Board has reviewed the information you have submitted addressing the concerns for your proposal entitled "The Effects of Inclusive Programming on General Education Students as Measured by Standardized Tests and the Implications for Educational Leaders and Policy Makers". Your research protocol is hereby approved as amended through exempt review. The IRB reserves the right to recall the proposal at any time for full review.

Enclosed for your records is the signed Request for Approval form.

The Institutional Review Board approval of your research is valid for a one-year period from the date of this letter. During this time, any changes to the research protocol must be reviewed and approved by the IRB prior to their implementation.

According to federal regulations, continuing review of already approved research is mandated to take place at least 12 months after this initial approval. You will receive communication from the IRB Office for this several months before the anniversary date of your initial approval.

Thank you for your cooperation.

Sincerely,

Mary F. Ruzicka, Ph.D.

Mary F. Ruzicka, Ph.D.
Professor
Director, Institutional Review Board

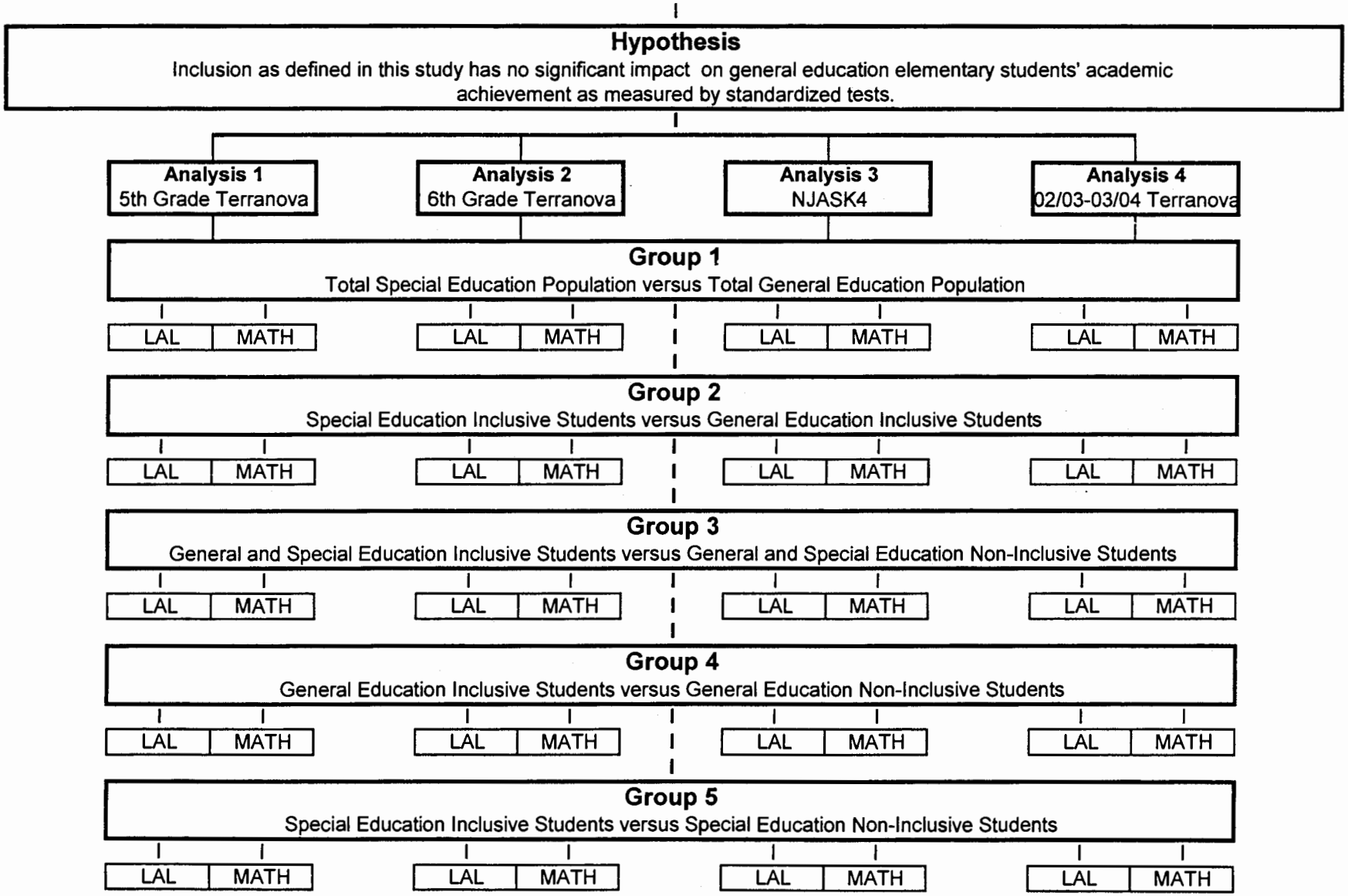
cc Dr John Collins

Office of Institutional Review Board
Presidents Hall
Tel: 973.313.6314 • Fax: 973.275.2978
400 South Orange Avenue • South Orange, New Jersey 07079-2641

Appendix D

Synthesized Results of Study

Organization of the Study



Results of the Study

Hypothesis

Inclusion as defined in this study has no significant impact on general education elementary students' academic achievement as measured by standardized tests.

Analysis 1 5th Grade Terranova	**Analysis 2** 6th Grade Terranova	**Analysis 3** NJASK4	**Analysis 4** 02/03-03/04 Terranova

Group 1

Total Special Education Population versus Total General Education Population

	LAL	MATH		LAL	MATH		LAL	MATH		LAL	MATH
mdif	35.776	49.361	**mdif**	48.719	58.697	**mdif**	29.033	25.536	**mdif**	1.660	28.000
t value	9.179	9.642	**t value**	10.338	9.180	**t value**	6.609	3.745	**t value**	1.146	14.311
sig	0.000	0.000	**sig**	0.000	0.000	**sig**	0.000	0.000	**sig**	0.253	0.000
	yes	**yes**		**yes**	**yes**		**yes**	**yes**		**no**	**yes**

Results of the Study

Hypothesis

Inclusion as defined in this study has no significant impact on general education elementary students' academic achievement as measured by standardized tests.

Analysis 1 5th Grade Terranova	**Analysis 2** 6th Grade Terranova	**Analysis 3** NJASK4	**Analysis 4** 02/03-03/04 Terranova

Group 2

Special Education Inclusive Students versus General Education Inclusive Students

	LAL	MATH		LAL	MATH		LAL	MATH		LAL	MATH
mdif	34.400	61.800	**mdif**	66.107	58.690	**mdif**	18.167	28.630	**mdif**	2.099	28.187
t value	3.759	4.609	**t value**	4.109	4.127	**t value**	1.071	1.596	**t value**	1.362	13.423
sig	0.001	0.000	**sig**	0.001	0.001	**sig**	0.299	0.128	**sig**	0.175	0.000
	yes	**yes**		**yes**	**yes**		**no**	**no**		**no**	**yes**

Results of the Study

Hypothesis

Inclusion as defined in this study has no significant impact on general education elementary students' academic achievement as measured by standardized tests.

Analysis 1 5th Grade Terranova

Analysis 2 6th Grade Terranova

Analysis 3 NJASK4

Analysis 4 02/03-03/04 Terranova

Group 3

General and Special Education Inclusive Students versus General and Special Education Non-Inclusive Students

	LAL	MATH		LAL	MATH		LAL	MATH		LAL	MATH
mdif	3.299	0.904	**mdif**	19.092	25.001	**mdif**	7.507	8.005	**mdif**	0.071	27.321
t value	0.490	0.101	**t value**	2.048	2.141	**t value**	1.416	1.007	**t value**	0.019	5.538
sig	0.624	0.919	**sig**	0.041	0.033	**sig**	0.158	0.315	**sig**	0.985	0.000
	no	**no**		**yes**	**yes**		**no**	**no**		**no**	**yes**

Results of the Study

Hypothesis

Inclusion as defined in this study has no significant impact on general education elementary students' academic achievement as measured by standardized tests.

Analysis 1 5th Grade Terranova

Analysis 2 6th Grade Terranova

Analysis 3 NJASK4

Analysis 4 02/03-03/04 Terranova

Group 4

General Education Inclusive Students versus General Education Non-Inclusive Students

	LAL	MATH		LAL	MATH		LAL	MATH		LAL	MATH
mdif	0.462	0.462	**mdif**	4.244	15.205	**mdif**	8.558	5.575	**mdif**	2.103	28.243
t value	0.112	-0.769	**t value**	0.412	1.152	**t value**	1.772	0.685	**t value**	1.443	13.840
sig	0.912	0.442	**sig**	0.681	0.250	**sig**	0.078	0.494	**sig**	0.150	0.000
	no	**no**		**no**	**no**		**no**	**no**		**no**	**yes**

Results of the Study

Hypothesis

Inclusion as defined in this study has no significant impact on general education elementary students' academic achievement as measured by standardized tests.

Analysis 1 5th Grade Terranova

Analysis 2 6th Grade Terranova

Analysis 3 NJASK4

Analysis 4 02/03-03/04 Terranova

Group 5

Special Education Inclusive Students versus Special Education Non-Inclusive Students

	LAL	MATH
mdif	-1.038	6.667
t value	-0.082	0.368
sig	0.935	0.714
	no	**no**

	LAL	MATH
mdif	23.924	16.140
t value	1.901	1.049
sig	0.062	0.298
	no	**no**

	LAL	MATH
mdif	-3.026	9.192
t value	-0.181	0.404
sig	0.857	0.688
	no	**no**

	LAL	MATH
mdif	-5.063	24.313
t value	-0.649	3.644
sig	0.526	0.002
	no	**yes**